FIRST '62 CARS!

IND
MOTOR TREND

OCTOBER 1961 35c

PONTIAC PLYMOUTH DODGE TEMPEST CHRYSLER & 300

DART IMPERIAL LANCER VALIANT STUDEBAKER HAWK

THE '61 FORD

beautifully built to be more service-free...inside and out!

■ **Bold, imaginative engineering produces many new minimum-service features for the Ford Fine Car Family.**

Inside and out, the Ford Family of Fine Cars is designed to require less servicing than ever, with fewer oil changes, less frequent chassis lubrication, self adjusting brakes and triple-life mufflers.

And inside each engine, too, Ford adheres to traditional high standards of quality by specifying Perfect Circle piston rings for original equipment use. Falcon, Comet, Ford, Mercury, Thunderbird and Lincoln Continental engines utilize the performance advantages of PC ring sets, custom-engineered to each engine's specific requirements.

PERFECT CIRCLE *The Rings the "Pros" Prefer!*

PISTON RINGS • PRECISION CASTINGS • SPEEDOSTAT • ELECTRONIC PROGRAMING EQUIPMENT

Hagerstown, Indiana — Don Mills, Ontario, Canada

HARLEY-DAVIDSON
1962 FUN-O-RAMA!
8 NEW EXCITING MODELS
I'M GETTING RID OF TRAFFICITIS AND SAVING MONEY, TOO WITH THIS ALL-NEW 80-MPG PACER!
TALK ABOUT A HOT CYCLE... THE NEW SPORTSTER 'H' HAS EVERYTHING FOR ALL-AROUND RIDING THRILLS!
COME RIGHT IN, FOLKS! WE'VE GOT MORE NEW MODELS FOR 1962 THAN WE'VE EVER OFFERED!
DON'T MIND TAKING A BACK SEAT ON THIS ONE!
TOLD YOU THE NEW SPRINT IS DIFFERENT!
IT'S SPRY, SPIRITED.... AND THE PRICE IS RIGHT FOR ME!
BRING ON THE TROUT... I'M BLAZING NEW TRAILS WITH THIS NEW RANGER MODEL!
GO, GO, GO! I'LL LEAVE 'EM IN THE DUST WITH THIS NEW SPORTSTER 'CH'...ON OR OFF THE ROAD!
ON ANY ROUGH-AND-TUMBLE ACTION THAT SCAT'S A BEAUT!
JUST RIGHT FOR SCRAMBLES!
THAT GOES FOR BOTH OF US!
HONEY HOW ABOUT A DELUXE DUO-GLIDE FOR OUR NEXT VACATION TOUR?
MAN WHEN THEY SAY 'SCAT' THEY MEAN SCAT!
DAD, YOUR TOPPER 'H' IS AN EXTRA SET OF WHEELS THE WHOLE FAMILY CAN USE!

Stolen from Research Library
• PETERSEN PUBLISHING CO. •

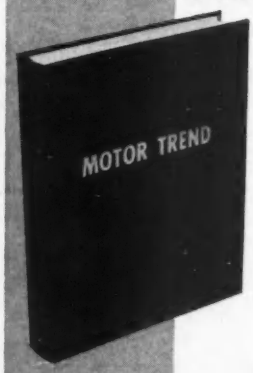
HARLEY-DAVIDSON MOTOR CO.
DEPT. MT-10 MILWAUKEE 1, WIS.

Please send me the new literature on the 1962 Harley-Davidson motorcycle and motor scooter lines.

Name..... Age.....
Address.....
City..... Zone..... State.....

The scene? Your Harley-Davidson dealer. Stop in now for a look at the all-new line of Harley-Davidson motorcycles and motor scooters for '62. Take a test ride, too.

GET THIS HANDSOME Leatherette BINDER TODAY



Keeps your Motor Trend copies like new. In an amazingly short time you'll have a complete, fully illustrated Motor Trend library at your fingertips.
Only $3.00 each

MOTOR TREND BINDER MT-1061
5959 Hollywood Blvd., L. A. 28
Send me my Motor Trend binder today; $3 enclosed in (check one) Cash ☐ Check ☐ Money Order ☐ In Canada — 75¢ duty on delivery
Name_____
(please print)
Address_____
City_____ Zone_____ State_____

Turn interest in car-styling into lifetime career... Study in California

Become a car stylist, industrial or product designer. Study with working professionals at accredited school. Large enough for complete facilities—small enough for individual attention. Bachelor's Degree. Feb., June, Sept. classes now forming. Write G. A. Jergenson, 5353 West 3rd St., Los Angeles.

THE ART CENTER SCHOOL

Editor: Don Werner
Managing Editor: James Miller
Senior Editors: Robert Ames, John Lawlor, Barney Navarro
Photo Editor: Ralph Poole
Art Director: Albert H. Isaacs
Associate Editors: Hugh Stevenson, Robert Temple
Editorial Assistant: Ruth M. Yamazaki

Publisher: Robert E. Petersen
General Manager: Lee O. Ryan
Editorial Director: Wally Parks
Advertising Director: A. M. Benedict
Advertising Manager: William Burke
Circulation Manager: Herb Metcalf
Production Manager: Jack Preston
Ad Production: Harry Foster
Photographers: Robert D'Olivo, Chief Pat Brollier, Randy Holt
European Editors: Gordon Wilkins, London, Gunther Molter, Stuttgart

Motor Trend

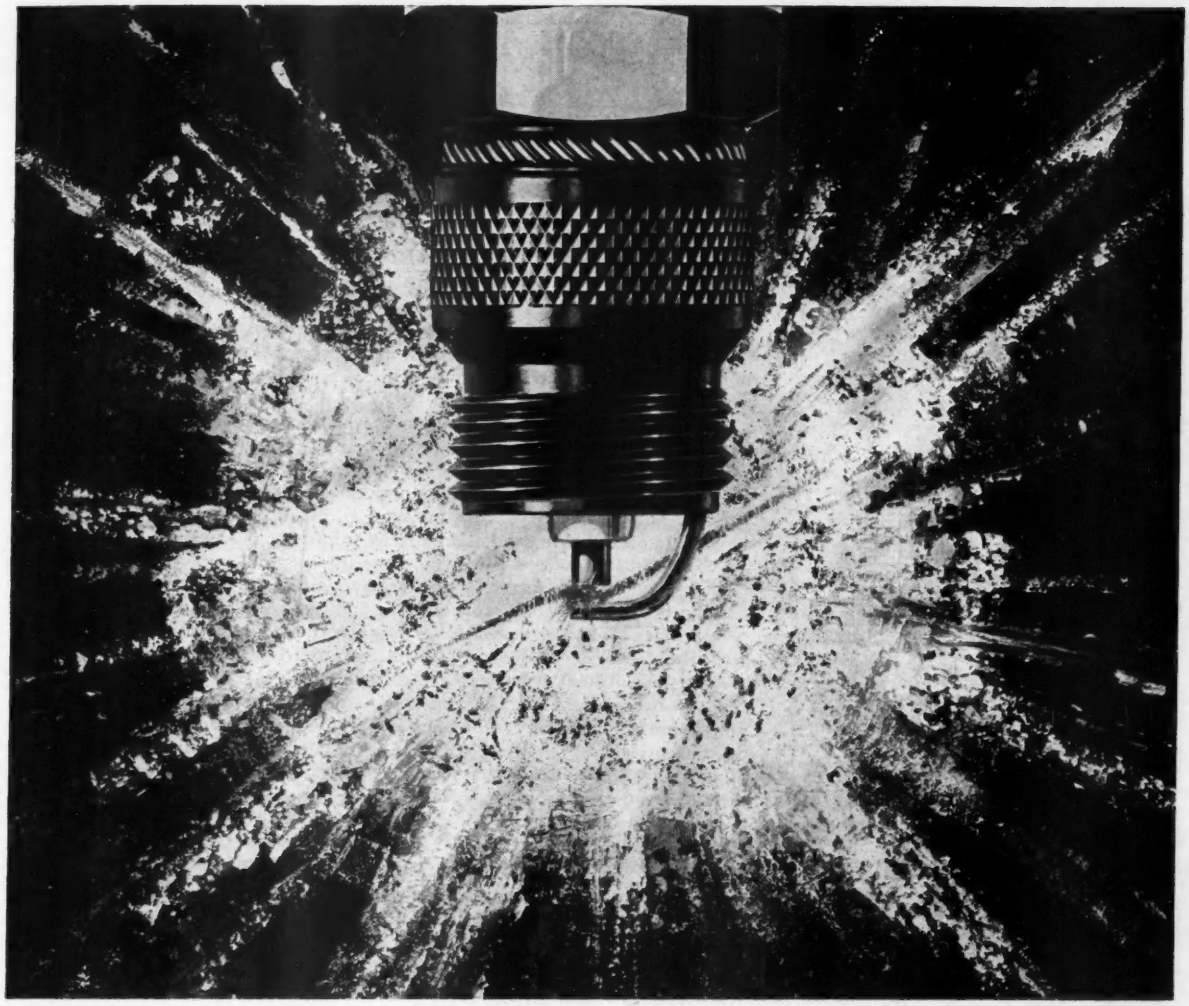
OCTOBER 1961 VOLUME 13, NO. 10

THE 1962 PONTIAC 18
Inside the 1962 CHRYSLER 24
First Look at the DODGE 28
LANCER Variations for '62 32
IMPERIAL 34
Preview of the New Studebaker HAWK 36
Are Car Brakes Safe Enough? 41
THE 1962 TEMPEST 42
New Singer Vogue 47
The '62 Valiant 48
Profile of the '62 PLYMOUTH 50
Road Test: VOLVO 122 S 54
Road Test: MERCEDES 190 56
Know Your Car: Drive Train Configurations 60
For Men Only: Greenbrier vs. Econoline 62
Driver's Report: The New Renault 4-L 64
Road Test: MG A 1600 MK II 66
European Report 70
Official Debut of the VW 1500 74
Racing Stocks 76

DEPARTMENTS

Editor's Report . . . . . 9 Motor Trends 18
Letters . . . . . 9 Sell or Swap 78

Motor Trend, U.S. copyright 1961 by Petersen Publishing Co., 5959 Hollywood Blvd., Los Angeles 28. Phone HOllywood 6-2111. Second-class postage paid at Los Angeles, California, and at additional mailing offices. Published monthly.
Subscription Rate: $3.50 per year; 2 years $6.00. Above rates for U.S. and its possessions; all other countries: one year — $4.50; 2 years — $8.00. Single copy 35¢.
Change of Address. Six weeks' notice is required. When requesting a change, please name magazine and either furnish an address imprint from a recent issue, or state exactly how label is addressed. Change cannot be made without the old as well as new address.
Advertising: Los Angeles Office — 5959 Hollywood Blvd., Los Angeles 28. **Detroit office** — 3337 Book Bldg., Detroit 26. Phone WOodward 3-8245. **Chicago office** — 360 N. Michigan Ave., Chicago 1. Phone FRanklin 2-6067. **Cleveland office** — 1405 E. 6th St., Room 312, Cleveland 14. Phone MAin 1-2006. **Eastern office** — 770 Lexington Ave., New York 21. Phone PLaza 1-5260.
Printed in U.S.A. by W. F. Hall Printing Co., Chicago. Member Audit Bureau of Circulation.



Automotive Research Library
★ PETERSEN PUBLISHING CO. ★

Autolite, the sparkplug that cleans itself while you drive,

is now standard equipment on the Ford Family of Fine Cars.

This unique performance and economy feature is one of the reasons that prompted Ford Motor Company, and several other car makers, to specify Autolite Spark Plugs as standard equipment on every car they build.

The Autolite Power Tip is longer than the tip of ordinary plugs. And because it is longer, it extends much deeper into your engine. Lead deposits that build up on the tip are immersed in the searing heat of the exploding gasoline and are literally burned off. With ordinary plugs, however, the deposit just builds up as the miles pile up. It's this deposit that eventually kills ordinary plugs.

If your present plugs are killing the pep and gas-mileage in your car, try Autolite Spark Plugs. Judge for yourself if they don't go better in your car, too.

AUTOLITE ✦ SPARK PLUGS

Now standard equipment on the Ford Family of Fine Cars.

GLIDE CONTROL

Automatic Throttle and Speed Setter

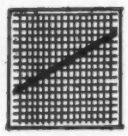
FOR ALL CARS AND TRUCKS

Lets You Cruise Along With Your Foot Off the Accelerator — A Touch of the Toe Sets It — A Touch of the Toe Releases It!

Step On Brake or Step On Button

Glide Control is as easy to use as your headlight dimmer; set it any speed desired— immediately cuts out on braking and acceleration. For emergency bursts of speed over the desired setting, normal foot pressure on the accelerator overrides the control and removing the foot allows the speed to return to the preset speed. Glide Control is wonderful for maintaining legal speeds in posted areas.

Glide Control "frees" your foot from the throttle . . . feeds the gas for you, safely and economically. Helps prevent unintentional speeding.



Glide Control increases gas mileage up to 25% — pays for itself in gas savings alone. All its other benefits and pleasures can be yours at no cost.

Now — with a Glide Control on your car or truck, you can cruise along the highway steadily at any speed you desire, safely and comfortably, with your foot off the accelerator. Glide along without foot and leg becoming cramped and fatigued. Arrive at your destination more refreshed, more relaxed.

Glide Control is easier to use than any other cruising throttle and speed control. A touch of your toe sets it — a touch of the toe to brake or floor button, releases the throttle control to normal operation. You don't have to remove hands from wheel or eyes from road to set extra knobs or levers. The Glide Control works automatically, electronically (no complicated mechanism to install). All you do to set throttle at desired cruising speed is to depress accelerator until desired speed is reached then touch your toe to floor button. This holds throttle at desired speed until you release it by a touch of your toe to brake or button.

Glide Control lets you achieve automatically, with any car, exactly what professional "economy run" drivers are famous for—record-breaking fuel savings through precise, even throttle control and fuel-feed. With Glide Control, you keep the fuel-flow uniform and any gas will produce more miles per gallon! It increases gas mileage up to 25%—pays you back its full cost within a few months!

A Speed Stabilizer . . . Not A "Governor." Maximum fuel economy is possible only when the fuel flow to carburetor is unvarying. The human foot can't accomplish this — but **Glide Control can!** Maximum comfort and driving ease are possible only when the right leg isn't kept tense, stiff, fixed to the gas pedal. Manual throttle control can't relieve this — **but Glide Control can!** You get any speed you want with Glide Control, and you can hold it for hours without strain.

- Gas economy through throttle control and fuel feed
- Reduction of driver's fatigue through elimination of constant pressure on accelerator.
- Easy to use — Merely set with foot switch and release immediately with either brake or foot switch.
- Helps driver stay within speed limit by pre-selecting speed to suit posted regulations.
- Of special appeal to salesmen, vacationers, commuters, Sunday drivers, freeway drivers, trailer owners, etc.
- Safety — Foot can rest near or upon brake pedal, reducing time for emergency brake stops.
- Complete installation and operation instructions included with unit.
- Can be installed by any mechanically inclined driver or local service station or garage.

Glide Control is selling now at the new low price of only **$19.95.** (Excise tax and shipping charges included). YOU SAVE **$9.55.**

DURO-MATIC PRODUCTS COMPANY
8509 Higuera Street
Culver City, California

GUARANTEE: Duro-Matic Products Co. guarantees Glide Control for a period of 60 days from date of purchase to be free of all mechanical and material defects, providing unit is installed and operated in accordance with printed instructions furnished with unit.

DURO-MATIC PRODUCTS COMPANY
8509 Higuera Street
Culver City, California

Please send me.....Glide Control Units. Enclosed is ☐ check ☐ money order (We pay shipping charges if payment is enclosed).

Send my **Glide Control** C.O.D. Enclosed is **$3.00** ☐ Balance payable when delivered. ("You pay shipping and C.O.D. charges.) Specify 6 Volt ☐ 12 Volt ☐

NAME .....
Please print

ADDRESS .....

CITY..... STATE .....
California Residents add 4% State Tax

MEMO FROM THE EDITOR

DON WERNER

A COUPLE OF ISSUES AGO it was pointed out here that European production cars are far ahead of those made in Detroit in advances in design. I further said it's quite clear the car makers in Europe will maintain this lead in progress in the years ahead.

The mail to MOTOR TREND in recent weeks has been heavy, some from readers who agree but more from those who disputed my view. A majority still insists that the Detroit cars are superior to the imports from Europe, and go on to cite various characteristics, such as performance and durability and passenger capacity, etc., as evidence.

The European lead in car design progress is a fact, and no amount of argument can change it. It should be noted that those readers who protested my comments about design went on to talk about car superiority, which is another aspect of cars and not necessarily the same thing as progress.

It is true, of course, that a design advance does make a car better in that particular detail. But it does not always make the car superior to all others in every respect. There are cars of the current model year, for instance, that are perfectly conventional and yet better by some definitions than another of advanced design. This is not uncommon and it generally results from the fact that the conventional car momentarily fills an immediate need. But ultimately advances in design are refined and perfected and prevail, either in the car which introduced them or by other cars through imitation.

High performance or greater passenger capacity are not good examples of progress unless they have been achieved by clever design. Otherwise our greatest automotive achievements would be the Greyhound bus and the Indianapolis race cars.

* * * *

FIVE YEARS AGO, out of every ten imported cars sold, six were Volkswagens. Latest figures show the ratio is now down to about four VW's out of every ten. If the current VW starts to slip the new VW 1500, soon to be introduced, probably will be imported to justify the more than 600 VW dealers and the $100 million investment in facilities. The question is whether the 1500 is the answer. I have not seen the car but auto industry executives I've talked to, on both sides of the Atlantic, are quite well informed. And they're not impressed. There may be a couple of bumps in the road for the little beetle.

* * * *

IN THE NEW TREND toward two-ply tires, as original equipment on many 1962 models, we hear a lot of reasons for their use. But one seasoned observer summed it up to me this way: "It's the same old trick by Detroit of trying to give you less for more money."...Bob Ames of MT's editorial staff was in Detroit recently for a briefing by a car engineer on a 1962 model. The man was describing a new development when suddenly he stopped. "Hold it," he cried, "that's for 1963!"

* * * *

A READER OF MT has written to ask about the references he reads and hears about "Blue Book" prices on used cars. The Blue Book is one of several periodicals published by various firms for the use of car dealers and salesmen. Generally these handbooks, about the size of a pocket dictionary, are issued five or six times a year. Wholesale and retail average prices are listed for all domestic makes and many imports. Current values cover the models of the past five or six years or so. MOTOR TREND, however, does not use the Blue Book as an authority for used car prices.

This question about used car prices caused me to check at random on several makes and models. One average price quotation (not in the Blue Book) is interesting. You remember the Cadillac Eldorado Brougham, introduced in March 1957, with a price tag of $13,074. It currently has a retail value of $4085. The Continental Mark II, of the same year, which originally was priced

at $9966, now carries a quote of $4325.

* * * *

THE REPORTS on the 1962 Plymouth and Dodge in this issue reveal an unusually interesting development. Both of these cars, in their standard size, are 202 inches in overall length. This is about 7½ inches shorter than they were in the preceding model year.

There have been quite a few cars of reduced length that have appeared in the past couple of years, but all of them have been new makes or types of vehicles. The new Dodge and Plymouth are the first big volume cars from Detroit to have drastically chopped off inches. This is a radical step and the reception by the car-buying public will be interesting to watch.

The forthcoming 1962 Ford and Chevrolet, which will be along shortly and covered fully in the November issue of MOTOR TREND, have not significantly altered their overall dimensions. Instead, they've held the line with their big cars and have resorted to introducing new types of smaller or shorter cars. And while these cars for Ford and Chevrolet represent a heavy investment of money, the men who guide the future of those car-making divisions are not risking as much as the men at Chrysler Corporation.

It is quite obvious that for well-established and major makes of cars, the Plymouth and Dodge are taking a drastic step in a new direction. For years and years now, the large-size standard cars have either increased in length or at least held the line. Occasionally an inch or so would be dropped here and there, but there was no evidence of any drastic shortening to the degree that Plymouth and Dodge have gone.

We won't know for several months whether or not the reduced length will be considered a benefit or a disadvantage by the public. Or possibly the car buyers will be totally indifferent. In such case, all the talk about reducing cars to more functional sizes will have been proved to be just so much smoke.

The forthcoming test will be even better evidence since the Plymouth and Dodge have made the length reduction without significantly reducing the interior passenger capacity. Indeed, in some specifications, they have increased the interior dimensions. By doing this, they have, in advance, thwarted the drivers who generally protest shorter cars on the grounds that interiors are too cramped.

It's about ten years now since the Plymouth and Dodge divisions last tried this trick of smaller on the outside, bigger on the inside. It is the real test of good design in cars, or at least one of them. We still don't know whether or not ten years ago Plymouth and Dodge were ahead of the times, or if the public just likes big and impressive automobiles. Maybe we'll find out in 1962. /MT

Big price breakthrough in magneto ignition!

NEW HOT SPARK!
NEW COOL COST!

MALLORY "MINI-MAG" PUTS MAGNETO IGNITION WITHIN THE REACH OF EVERY PERFORMANCE ENTHUSIAST

$125
COMPLETE WITH POWER PAK FOR ANY ENGINE

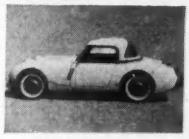
Now, when you modify your engine, you can afford the magneto ignition formerly considered a luxury. New Mallory "Mini-Mag" magneto gives you high-voltage, high-energy spark for extra-quick starts, top performance, incredibly long life for points and plugs. An 8-cylinder Mini-Mag will operate a 4-cycle engine at well over 10,000 rpm—*and will outlast the engine itself.* Power-Pak, included in price, permits battery starts. (Coil and on-off switch for push starts.) Small cam, special high speed contact point, centrifugal advance provide perfect spark timing to every cylinder at any rpm. Easy to install, easy to adjust (point clearances only). Mallory dealers, service stations are nation-wide. See them for the complete story on this great new low-cost magneto ignition system today—or write us direct.

■ **APPLICATIONS:** Available for nearly every kind of car, truck, bus, stationary and marine engine. Provides 100,000 miles (or equivalent hours) of service with virtually no burned points.

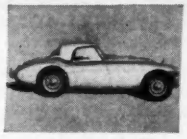
■ **LIBERAL EXCHANGE POLICY:** You can "move" the Mini-Mag system to another car for only $45.00, by returning the unit to your dealer for complete re-building and adaptation at the Mallory factory. Thus, you have a **protected** investment.

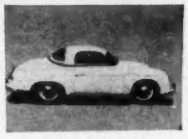
Mallory ELECTRIC CORPORATION
12416 Cloverdale, Detroit 4, Michigan

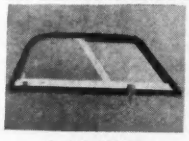
REMOVABLE HARD TOPS
& DOUBLE SLIDING SIDE PANELS

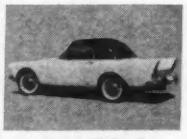

A/H Sprite thru 61

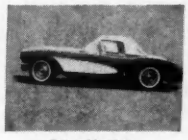
A. Healey thru 61


A. Healey thru 56


Porsche thru 61


Double sliding side panel


Sunbeam Alpine Top


Corvette top available for all models

MGA thru 61

PRICED AS FOLLOWS:

A/H Sprite	$54.70	Triumph	$76.43
Porsche	$54.70	Jaguar	$76.43
A. Healey	$61.02	MG TD & TF	$76.43
MGA	$61.02		
Protective panel cover	$ 8.00		

Top and sliding side panel units available for the SPRITE, MGA, TRIUMPH, MG-TD and TF, JAGUAR, PORSCHE and AUSTIN-HEALEY thru 56 at unit price.

Tops not requiring side panels available for the JAGUAR XK-150, AUSTIN-HEALEY 57-61, ALFA ROMEO, ALPINE SUNBEAM, FIAT, THUNDERBIRD, and all other sports cars.

GUARANTEED FIT, and all weather protection. Prompt deliveries.

SPECIFY MODEL AND YEAR OF CAR when writing for free brochure, on tops or panels.
50% on order — Balance C.O.D.
Dealers Inquiries Invited
Write for our new prices and designs for 1961.

PLASTIC DYNAMICS SALES CORPORATION
Engineers & designers of reinforced plastics
432 E. Weber Ave., Compton 2, California NE 6-4460

Letters

HIGH QUALITY STANDARDS?

An interesting sidelight to your story, "The Quest for Car Quality by Lincoln" (August issue), is an article that appeared in a recent issue of "Gasoline Retailer." This article, which is based on manufacturers' service bulletins, advises, and I quote:

"Plug Wires: An ignition miss on a 1961 Lincoln Continental may be caused by Nos. 7 and/or 8 spark plug wires grounding on the manifold heat shield. Inspect the wires and if, as is very possible, they are chafed, replace them. Then bend the heat shield to prevent contact with the wires."

It appears that although the Lincoln factory is quite concerned over the appearance of the body and major mechanical units, its quality standard falls far short of its apparent high standards when it comes to basic mechanical items whose malfunctionings can be so annoying and so easily corrected, and which with a little foresight on the part of the factory, can be prevented.
George R. Perryman Houston, Tex.

WE AGREE — AMEN!

Let me congratulate you on your fine editorial in the August issue of MOTOR TREND. I agree completely with every word.

One more thing I don't understand about Detroit is why none of the manufacturers builds an overhead-camshaft engine. Why do they have to stick to the pushrod-rocker arm arrangement? It seems a single-overhead-cam engine would be simpler, cheaper, and better.
Marvin Van Dusseldorp Leighton, Iowa

I couldn't agree more with the sentiments expressed in your "Editor's Report" in the August issue.

Because of the uniform poor quality of Detroit products as well as the technological lag you so adequately criticize, I am seriously considering the purchase of a Mercedes-Benz 220-S sedan before I return to the United States after this tour of duty in Canada.
Maj. Carl R. Pearson USAF

Your August "Editor's Report" was so very true. The infamous brute bulk and cheap manufacturing methods of today's Detroit iron are known the world over. The United States is surely paying the full price of "thinking for itself."

It's too bad that the only time Detroit will "go modern" is when foreign intervention threatens sales.

We have all the imagination and brain power here in the U.S. to be *first* in automotive thinking. It's about time we realized that today most people want something more in a car — that, for the most part, we are no longer a nation of huge machines and lavish coaches.

Where is the American version of Ferrari, or MG, or Volkswagen? All of these, you may say, are coming — and soon. We shouldn't have to wait for these things — we should have been first with them.
Charley Ransom Fort Lewis, Wash.

GULLIBLE AMERICANS

Thank you for awakening Detroit to the facts you disclosed in the August "Editor's Report."

I, like too many other readers, don't know these facts until I read them in my favorite magazine, MOTOR TREND.

I think the reason Detroit hasn't given us the many things foreign manufacturers have been giving their customers for years stems from the fact that we Americans take too much for granted. We are too gullible. For instance, I recently was told by a dealer, who was backed up by the factory, that our American cars with their high-compression engines are supposed to burn oil. Trying to push such "hogwash" as this off on the buying public is also pushing Detroit out of the car market.
M. C. Davis Jackson, Miss.

WILL STICK WITH DETROIT

Regarding your all-out editorial attack on Detroit engineering, I have this to offer.

For the kicks and for pinching your money till it screams, a set of alien wheels are fine. Yet, I feel it will take years for the low- and medium-priced imports to advance to the level of overall comfort (accessibility and roominess) and safety (protection) as found in comparable priced, standard-sized domestic iron.

With these benefits in mind I, for one, am glad to put up with the alleged archaic design and engineering in my Ford. At least I can drive it down any Los Angeles freeway without saying my prayers and in all the comfort I am accustomed to.

I might add all recent sales reports indicate I am not alone in my preferences. You might contemplate the verdict of the American buying majority — it has been a pretty good rule of thumb to go by.
Gerald L. Fennell Burbank, Calif.

SUPERIOR — WHERE?

I keep reading about how much better European cars are.

I operate an auto trim shop and rework a great many domestic as well as European makes. I fail to see where this superiority is — it sure isn't in the interior trim work. In fact, if something ever happened to the glue factory in England, this country wouldn't get many cars.

The car buyers of this country never see those European marvels stripped down like we auto trimmers do, so they just parrot what they read in most of the auto magazines and think they have something special.

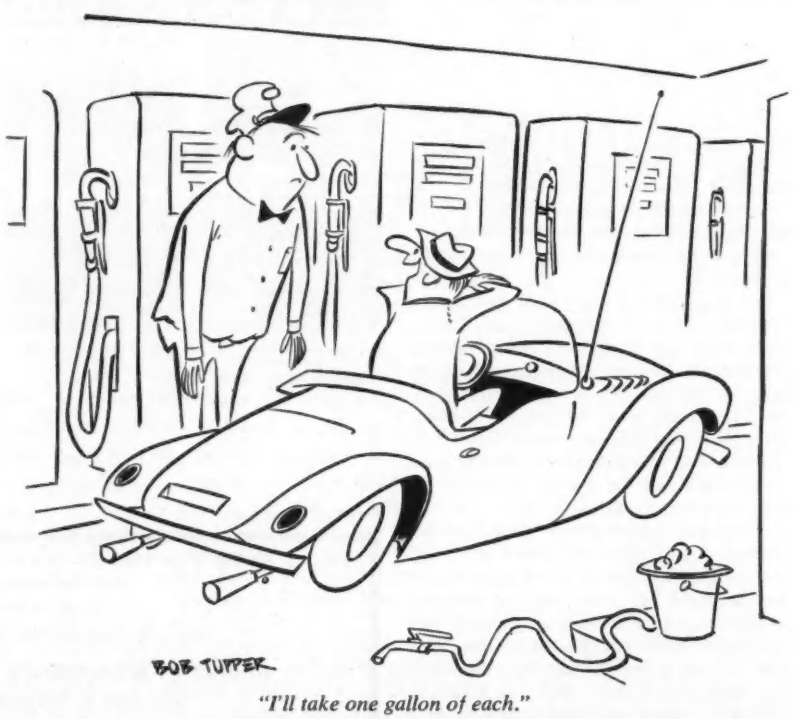
I own a 1960 Cadillac and have driven the Mercedes 220 sedan, and after the Cad the famous Mercedes seems like a cement mixer with wheels.

The Volkswagen driver brags about going 70 mph all day. He doesn't mention that he had all the string out and had nothing left for an emergency burst of speed.
Russell Wright Compton, Calif.

INADEQUATE BRAKES AND TIRES

I am an American living abroad, and I am quite surprised to see that the American automobile builders are not trying to produce cars which they might export like they did before the war.

Today in Europe you see less and less



"I'll take one gallon of each."

American cars, in spite of the fact that the so-called compact cars have a tremendous appeal for the European — for their comfort and appearance, as well as for their gasoline economy.

All the American cars, however, including the compacts, have a major defect for the European way of driving. There is no speed limit on the European roads, with the exception of about 1,000 miles in France on Saturdays and Sundays.

As an example, one of the most popular French automobile magazines has just published the test of a new German car, which did an average of 78 mph on 180 miles of open road, which means a speed of 100 to 110 mph most of the way.

We realize that all the people who live in Europe do not drive this way, but all American cars, including compacts, have brakes which are not adequate, because of fading. Most of the Americans living abroad and many Europeans would buy American cars if they would follow the European trend of having disc brakes on four wheels, or at least on the front wheels.

American cars which are shipped to Europe should also have tires which can be used without danger at a speed up to 110 or 115 mph. The regular tires on American cars are not built to sustain that speed, and many American tourists have blown up on the French highways, German autobahns and the beautiful Italian autostrads.

E. Baumann — Paris, France

TURBINE VS. ROTARY ENGINE

I respectfully submit that the turbine is not the obvious successor to our present piston engines, as stated in your August forecasts.

May I cite as my evidence the reports that production facilities are now being constructed for the Wankel rotary engine?

I have also been advised by a reliable source that solutions to the service life problems associated with the rotary engine's apex seals and spark plugs have been solved.

The path is now cleared for practical rotary engines, but the basic fact that will bring them into widespread use is their cost. Unlike turbines, which cost considerably more than today's piston engines, the rotary engines will cost less. Add to this the fact that rotary engines, for all practical purposes, are as free from vibration, as small (or smaller) and as light per unit of power compared to regenerative turbines.

Taken together, it is unlikely that turbines will be able to match the advantages of the rotary engine for many years to come.

You may say that this is tall talk. Perhaps so, but then we will know for sure within 15 months, and possibly sooner.

Robert Brooks — Waukegan, Ill.

NOW I KNOW WHAT I GOT

Congratulations on your article, "What Have You Got?" in your August issue! I've been looking for this information for a long time.

Tommy Satterwhite — Wichita Falls, Tex.

SOME OVERLOOKED POINTS

Your comparison of Ford and Chevrolet in the August issue overlooks some points. For example, that sloping trunk in the

continued on page 11

BARDAHL
ADDITIVE MOTOR OIL
WORLD'S NO. 1 SELLER
★ REDUCES FRICTION
★ INCREASES POWER
★ FREES RINGS AND VALVES
FREES AND QUIETS VALVE LIFTERS
Irwin Caplan
"He wants to drag race you, Mister, but I'm warning you he uses BARDAHL."

Check up before you crack up!

As you know, your shock absorbers are primarily safety devices designed to keep your tires on the road and your car under control. So don't risk life and limb on worn, dangerous shocks. Have yours checked regularly . . . and soon!

Get Gabriel Ajustomatics

Gabriel offers you a choice of several models. Chances are you will want the heavy-duty Ajustomatic, which lets you select the ride you want, for the roads you ride.

Best idea is to drop in soon at the sign of a Gabriel Shock Absorber Specialist. You'll be getting the best shocks made, and dealing with a man who knows what he's talking about.

Play it safe. Have those shocks checked now.

Also: The Gabriel Load-Absorber

Keeps your car at its LEVEL BEST

Not a mere "helper spring" contraption, but an entirely new air-oil device that prevents dangerous rear end sag and sideway under heavy loads . . . delivers a safer, more comfortable ride under all load and road conditions. For a perfect ride, get Ajustomatics in front and Load-Absorbers in back!

Gabriel
SHOCK ABSORBERS
LOAD ABSORBERS

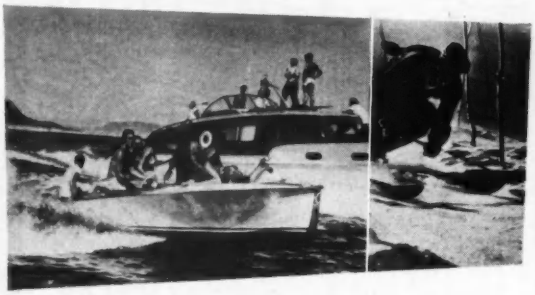
Tune in Martin Agronsky with "News in Depth" every weekday evening over NBC Radio.

NOW! YOU CAN OWN VALUABLE LAND

Just $10 down and $10 per month for choice property only 5 minutes drive from down-town

LAS VEGAS

VEGAS VIEW — The real estate with skyrocketing value



$10. DOWN

$10.00 per Month

$795 FULL PRICE

You can now take advantage of the fabulous business boom in the Las Vegas area. Here gains in real estate activity outstripped all other parts of the nation during 1959 with a spectacular jump of nearly 100 per cent in sales volume—this trend and the trend in retail sales and other business activity has continued to soar upward during 1960 and 1961.

Both fun and profit can be yours...Bask in the desert sun...Ski at 11,910 foot Mt. Charleston... Boat, swim and fish at giant Lake Mead. These water and snow-fun areas are within a 30-minute drive of VEGAS VIEW.

Vegas View sites are free of city taxes but **adjacent** to the present Las Vegas city limits—totally unlike much of the barren land being sold today in remote desert and swamp areas of doubtful future. The lots now have graded streets and electricity on the East and West boundaries of the subdivision. Never again will sites with such a **potential increase in value** be offered at these low, low prices. Comparable lots in Las Vegas are now selling for many hundreds of dollars more. In VEGAS VIEW just $10 will start you on your way to early future profits! Total cost of these 50' x 100' sites is only $795 plus the low interest included in monthly payments. You must act NOW to take advantage of this opportunity of a lifetime. Remember—only a very limited number of these choice sites are available.

LAND, INC.

130 LAS VEGAS BLVD. SOUTH, LAS VEGAS, NEVADA

JUST

2½

MILES FROM DOWNTOWN LAS VEGAS

MAIL THIS COUPON TODAY!

LAND, INC., 130 LAS VEGAS BOULEVARD SOUTH
DEPT. MT-10, LAS VEGAS, NEVADA

I wish to purchase _____ site(s) in VEGAS VIEW and have enclosed $10.00 as a deposit on each site. If for any reason I am not satisfied, I understand that my deposit will be returned to me immediately if I notify you within 30 days. Please RUSH brochure and sales contract to me today.

NAME _____

ADDRESS _____

CITY _____ STATE _____

Letters *continued*

Ford theoretically gives more cubic footage. It also means that whenever the brakes are applied at all hard, any loose small stuff in the trunk will roll up over it and lodge in the down slope on the other side of the rise. Chevy's nice, square, forward surface restrains the contents.

Ford's wind vents require unlocking with the left hand, then a transfer of the left hand to the wheel, while the right hand crosses to apply a push to the stiff vent. It has to be stiff, or the wind will blow it shut at high speed. Chevy's vents open nice and easy with the crank.

Chevy's key arrangement is superior to Ford because (as a Ford operator) I have to insert it right-handed, remove it and operate the door-latch button with my left hand, open the door, transfer the key to my left hand for insertion in the ignition. With Chevy I can keep it in one hand.

The Ford key wears rapidly because of the excessive use it gets, and then it has to be wiggled around before the pins in the lock line up and open.

In the Ford four-door, by pushing the button down on the front door and then on the back door, and closing the back door last, one can lock it without using the key. I've managed to lock one key in the Ford in this manner. However, as an old Chevy operator I learned to keep the extra key on my general key chain with the key for the trunk and am thus never completely locked out. Thus Ford's claim about the impossibility of locking the key in a Ford is invalid, and the inconvenience of their arrangement still remains.

C. P. Haber — Dallas, Tex.

In your comparative test of the Fords and Chevrolets, I believe you forgot to mention some very important things.

Why did you not compare the following: the insulation in both cars, the oil filter, the paint, the brake adjustment, the muffler, frequency of grease jobs and the weight of each car?

Ford throughout its entire line can't be beat by any automobile.

G. P. Keahey — Ramer, Ala.

ONLY ONE KEY

In your August issue you state that Chevy and Ford are alike in that the ignition-door key will not also fit the trunk.

I think you will find that you are wrong about the Chevy. I own a 1961 Impala, and one key does the trick for all locks. I am told that this has been a Chevy feature for over ten years.

Nelson D. Lunceford — Warrenton, Va.

NO EMBLEM SHAPE

You state that the Chevrolet hood release mechanism is in the shape of a Chevrolet emblem.

I own a 1961 Impala sport coupe with the 283-cubic-inch engine with four-barrel carburetor. I have looked at my hood release from all angles and have yet to see it in the shape of a Chevrolet emblem.

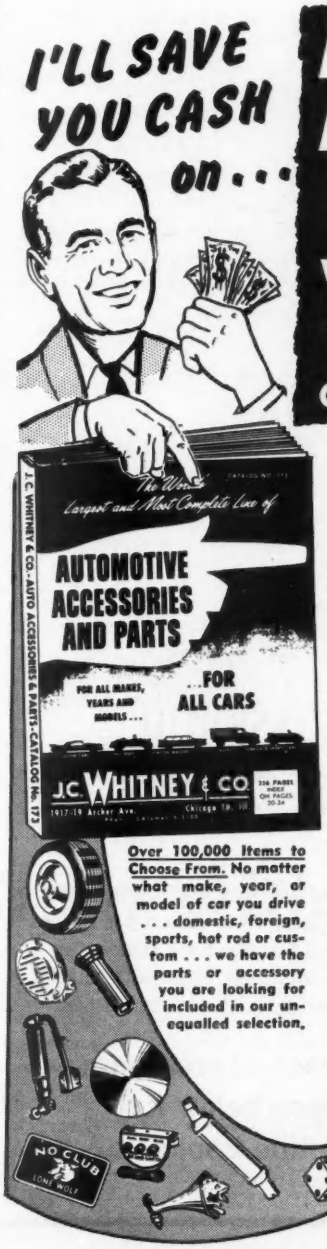
Robert N. Hart — Lee Hall, Va.

TOO MUCH — TOO LATE!

Your Buyer's Guide in the July issue was

When You Change Your Address

You won't want to miss your **MOTOR TREND MAGAZINE** when you move to your new home — so please tell us, well in advance, what your new address will be. "It isn't enough just to tell the post office, for they won't forward your copies unless you pay extra postage." When you write us, be sure to give us your old address too — even better, enclose the address label from a recent issue. **Write to MOTOR TREND MAGAZINE, 5959 Hollywood Blvd., Los Angeles 28, California.**


I'LL SAVE YOU CASH on . . .
The World's Largest and Most Complete Line of
AUTOMOTIVE ACCESSORIES AND PARTS
FOR ALL MAKES, YEARS AND MODELS . . .
. . . FOR ALL CARS
J.C. WHITNEY & CO.
1917-19 Archer Ave. Chicago 16, Ill.
J.C. WHITNEY & CO. - AUTO ACCESSORIES & PARTS - CATALOG No. 173
Over 100,000 Items to Choose From. No matter what make, year, or model of car you drive . . . domestic, foreign, sports, hot rod or custom . . . we have the parts or accessory you are looking for included in our unequalled selection.
NO CLUB
LONE WOLF

AUTOMOTIVE ACCESSORIES AND PARTS with my 356 page CATALOG Over 100,000 Values!

SAVE UP TO 50% ON ALL YOUR AUTOMOTIVE NEEDS!

It's new for '62 . . . the world's largest, most complete auto parts and accessories buying guide . . . the value-packed 356 page Whitney catalog that SAVES YOU UP TO ½ on ALL your automotive needs! It lists and illustrates thousands of parts and accessories for every car, truck, station wagon, hot rod, custom car and dragster, as well as foreign and sports cars, plus page after page of hard-to-find items for class Model "A" Fords. You'll find everything for early models to brand-new 1962 models . . . without a doubt, the greatest selection ever offered anywhere!

This brand-new J. C. Whitney catalog features the latest in Hollywood and Custom equipment, just out hi-speed and racing parts, wanted kart accessories, as well as many, many hard-to-find exact replacement parts for old and current models alike! Everything any car owner needs and wants is ready for "armchair" ordering!

What's more, when you buy direct by mail from Whitney, you SAVE MONEY! Our tremendous buying power and huge volume enable us to cut prices to rock bottom . . . you actually save up to 50% and more! We stock over 100,000 items, ready for immediate shipment—with new, improved facilities to speed up service on every order. And . . . **you can buy with complete confidence, for we guarantee satisfaction on every order or your money back!**

Just send us the coupon below to obtain your FREE copy of this money-saving catalog. Please enclose 25c in coin to help pay part of the handling and mailing costs (refunded on first $5.00 order). Don't delay—see what's new for '62 in the automotive field in this complete, bargain-filled, fully illustrated book. **SEND FOR YOUR COPY TODAY!**

FREE CATALOG COUPON

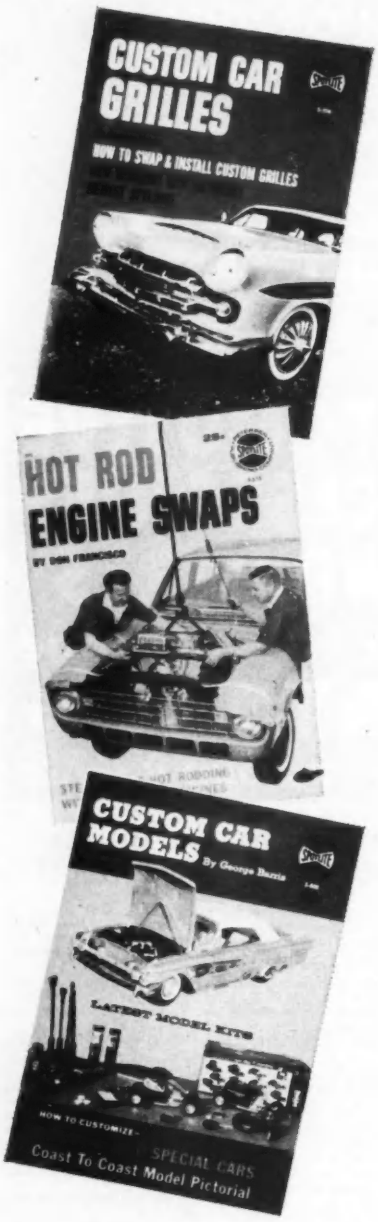
J. C. WHITNEY & CO.
1917 010 Archer Avenue, Chicago 16, Ill.

Please send me your giant automotive catalog. I enclose 25c to cover part of handling and mailing cost (refunded on first order of $5 or more). Offer good in U.S.A. only.

Name_____

Address_____

City_____ Zone____ State_____



The Complete How-To-Do-It Library

No. 506 CUSTOM CAR GRILLES
Complete "How to Do It" facts . . How to Swap and install custom Grilles . . . Newest Designs, Methods, Styling. Bolt-ons. . . Plastics, swapping . . . Floating . . . Hand made . . . tube grilles.

No. 510 HOT ROD ENGINE SWAPS
All the latest know-how and fully illustrated step by step procedures of hot rodding with the latest model engines.

No. 508 CUSTOM CAR MODELS
Fully illustrated information on How To Customize HOT RODS and special cars. Latest Model Kits . . . Model and Show Displays.

PETERSEN PUBLISHING COMPANY
SPOTLITE BOOKS

In the months to come your spotlite library will include such "How-To-Do-It" Spotlite Books as the following: Hot Rodding Chevy V8 • Custom Car Fenders and Headlights • Custom Car Pick-Ups • Hot Rod Blowers • Custom Car Fins and Taillights • Hot Rod Dragster Parts. Fully illustrated Spotlight Books provide all the "How-To-Do-It" know-how in step-by-step fashion.

Spotlite Books are 25¢ each at your newsstand or send 25¢ with coupon below for any of the current Spotlite Books.

Letters *continued*

an outstanding combination of research and planning that reflects credit to your entire staff.

There is, however, one point of constructive criticism that I would like to offer. You have arrived with "too much, too late."

Since the public is deluged with conflicting advertising claims from each manufacturer, supplemented by statistics from economy runs, track meets and testimonials, it becomes increasingly clear that the public can only be served by a media with sufficient courage to select *one car* in each price group as outstanding for its combination of engineering and performance.

Your "Car of the Year" award is a step in the right direction; however, your choice is predominantly based upon creative engineering and design, not on economy of operation.

Economy cars are a misnomer when applied to U.S. manufacturers. Compact cars which have been originally rated by manufacturers to perform at 30 mpg are rated by your tests at 19 to 25 mpg.

Is it any wonder that the public is confused? Is it any wonder that the public regards Detroit with a jaundiced eye? The public wants and needs an unbiased analysis of a car's true figures relating to economy of operation prior to consideration of purchase.

The 1961 cars have been on the market for over nine months, and your Buyer's Guide is anti-climactic to those who have already purchased a 1961 model.

I suggest that your testing and analysis results be published in a Buyer's Guide at no later date than December or January of 1962.

Sidney Matz — Franklin Park, N. J.

We agree that a complete Buyer's Guide edition on the newsstands in December or January would be the ideal service to render our readers. However, MOTOR TREND, *like all monthly magazines, is prepared almost three months in advance of the publication date. This makes it impossible to gather all the necessary data for a comprehensive analysis that early in the model year.*

Furthermore, rather than resort to a crash program of testing, we feel that we should take the time for thorough tests, in order to give a fair appraisal of each make. We feel that this is only fair to both the reader and the manufacturer.

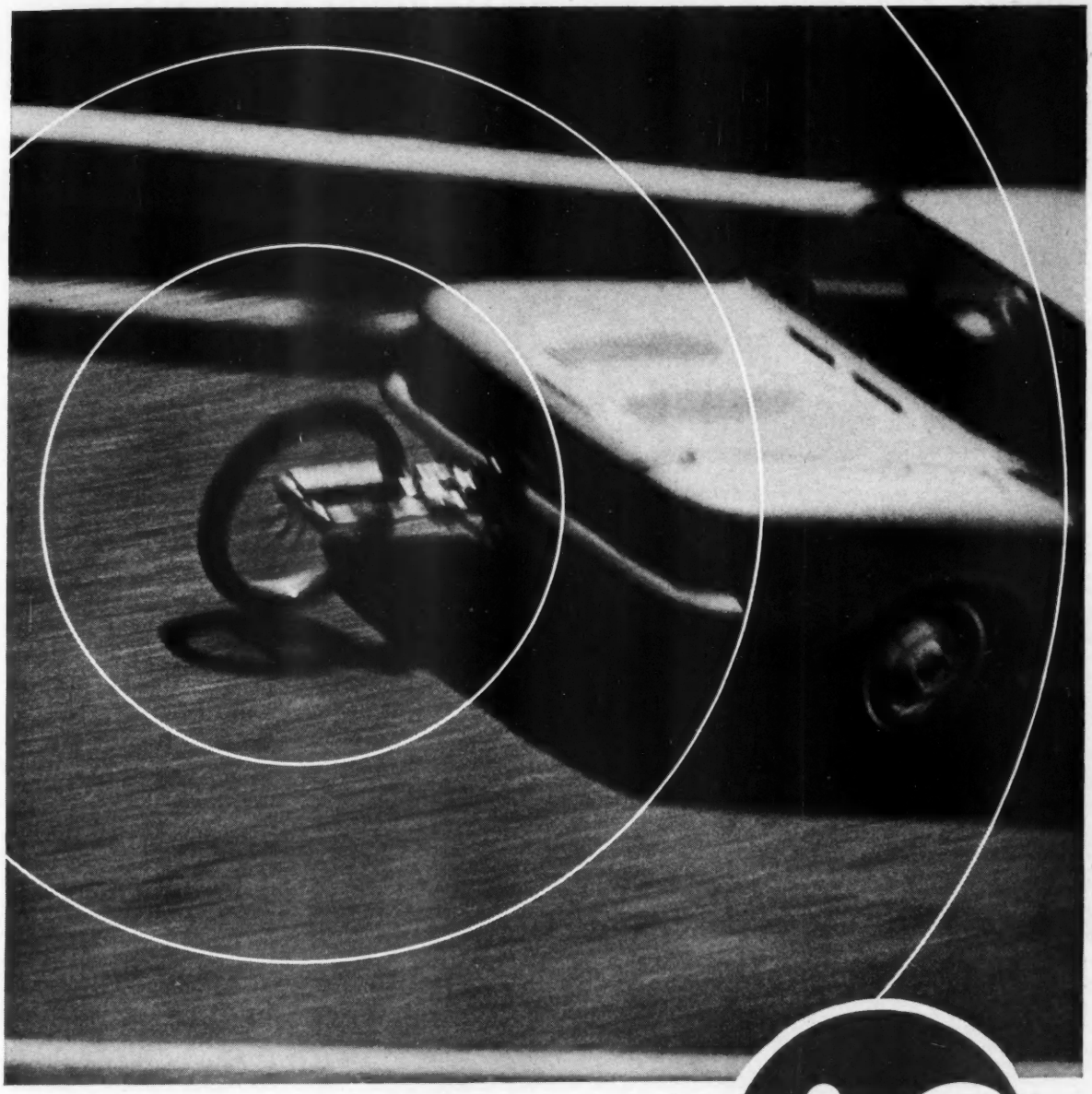
NOT FIRST WITH THE LATEST

In your August issue you report that General Motors is going to use electric actuators on its 1963 model convertibles. That amazes me no end.

I own a 1952 Studebaker commander convertible with an electric motor under the rear seat, which raises and lowers the roof through a worm and sector shaft arrangement. This works very well, and there is no hydraulic oil involved.

A few years ago I owned a Nash Statesman. I have also owned various makes of the Big Three, and do at the present time. But over the years I have learned that the Big Three don't invent everything or the best.

W. J. Smith — Shady Grove, Pa.



AC SPARK PLUG ⚛ THE ELECTRONICS DIVISION OF GENERAL MOTORS

you get ACtion with

AC

FIRE-RING SPARK PLUGS

Your authentic car buff *is awfully finicky about a lot of peculiar things.*

Take the matter of spark plug heat ranges. This man will insist on AC Fire-Ring Spark Plugs simply because he knows AC's heat ranges truly describe the plug's capacity to dissipate heat. They are by far the most accurate in the business—a result of constant testing on the track and in the lab.

All this fret is well worth while for people who really care how their cars run. AC heat range accuracy avoids pre-ignition, broken insulator tips and excessive electrode wear. ACs retain their heat range, too, with a heat-bonded, gas-proof inner seal.

If you love your car, ask for ACtion . . . ask for AC!

WINNING RACES . . . OR JUST GOING PLACES

THERE'S A TEST-PROVED FIRESTONE TIRE FOR YOU. Next time you need tires, get a set that's matched to your motoring pace. Get Firestone's Super Sports 170-T, for example . . . a cool-running racing tire with special tread and tough nylon cord. Not a racer? You'll prefer the DeLuxe Champion . . . built a new way to deliver up to 36% more miles, quicker stops and a quieter ride. Both tires proved in Firestone's annual 425-million-mile test program, both bring you (1) Firestone Safety-Fortified cord and (2) Firestone Rubber-X-101, longest-wearing rubber ever used in Firestone tires. Buy Firestones, on convenient payday terms if you wish, at your Firestone Dealer or Store.

Firestone

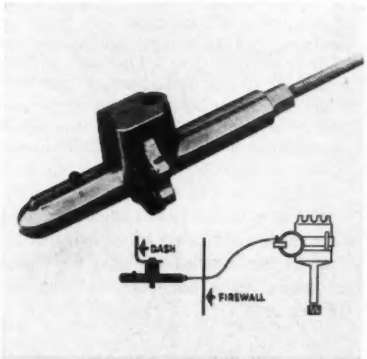
DELUXE CHAMPION SUPER SPORTS 170-T

SPEEDWAY-PROVED FOR YOUR TURNPIKE SAFETY

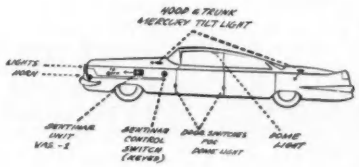
Copyright 1961, The Firestone Tire & Rubber Company

PRODUCT TRENDS

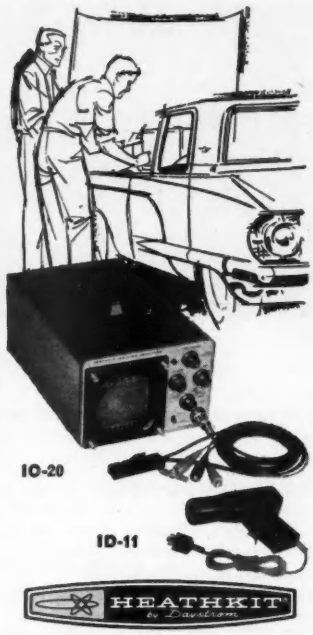
ALMQUIST IS OFFERING by mail an imported safety helmet designed to meet the requirements of race drivers, kart drivers, motorcyclists and dragsters. In sizes from 6½ to 7½. Write Almquist Engineering Co., Milford, Pa.



AUTO-TIMER enables the driver to adjust spark timing instantly from the dash while driving, to meet any varying conditions. Price, $6.95. For further information write Engine Accessories Mfg. Co., 5801 E. Beverly Blvd., Los Angeles, Calif.



NEW PROTECTIVE alarm guards car even though doors are unlocked. Tampering with any door, trunk, hood; crossing wires; short circuit; or even jacking up car will set off alarm. Price, $28.95. Sentron, Inc., 119 Dover St., Somerville 44, Mass.



The Heathkit Ignition Analyzer and Timing Light give top quality performance...

- **Save you hundreds of dollars**
- **Choose easy-to-assemble kit or factory built models**

Now you can find ignition defects quickly—while the engine is running and without removing parts—with the Heathkit IO-20 Ignition Analyzer. Indicates shorted plugs, defective points, incorrect dwell time, coil and condenser problems, etc. View primary, secondary, parade or superimposed patterns without lead switching. With the easy-to-assemble kit, you save nearly 50%! Order now. 15 lbs.

Kit IO-20...$9 dn., $9 mo.....$89.95
Assembled IOW-20...$17 dn., $15 mo.....$169.95

ID-11 IGNITION TIMING LIGHT ACCESSORY plugs into the IO-20 Analyzer directly, no other connections needed. Convenient, accurate, produces intense white light. 2 lbs.

Kit ID-11...$14.95...**Assembled IDW-11**.....$19.95

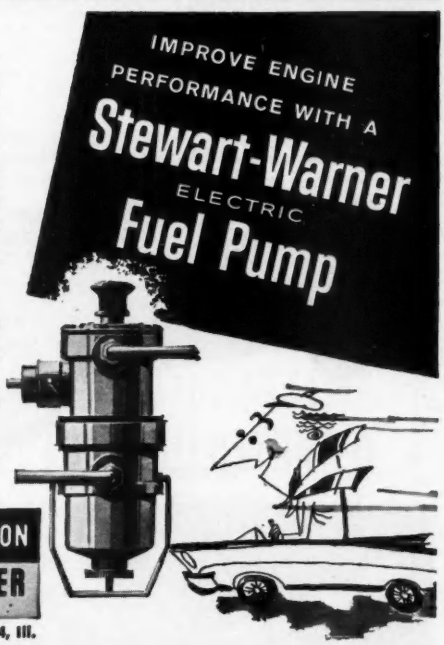
HEATH COMPANY
Benton Harbor 27, Michigan
Please send my free Heathkit catalog
Name_____
Address_____
City_____ Zone____ State____

Quick starts in all kinds of weather... dependable operation at all speeds... with a Stewart-Warner Electric Fuel Pump. No more hot weather vapor lock or hard starting even when the temperature's way down.

The quality-engineered Model 240-A features an automatic pressure regulator. It automatically maintains desired pressure at carburetor from 1 psi to 8 psi, delivers up to 60 gallons per hour. A built-in fuel filter eliminates need for any other filter in the fuel system.

The popular Model 220 finds wide use where delivery requirements do not exceed 20 gallons per hour and pressure requirements are not critical. Efficient, trouble-free. Stewart-Warner Electric Fuel Pumps available in 6 and 12-volt types for any gasoline engine.

See your local Stewart-Warner dealer. He can recommend the correct Stewart-Warner Electric Fuel Pump for your needs.



Symbol of SW Excellence
INSTRUMENT DIVISION
STEWART-WARNER CORPORATION
Dept. J-101, 1840 Diversey Parkway, Chicago 14, Ill.

KONI
ADJUSTABLE SHOCK ABSORBERS
20,000 MILE GUARANTEE

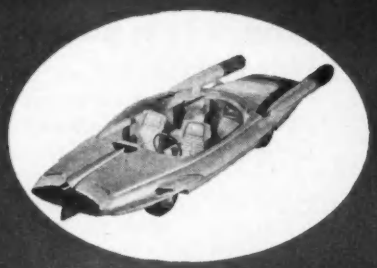
- **Every** KONI is performance tested
- Adjusts up to **double** damping
- **Double** acting, bump and rebound
- Specially designed for each car
- Fit domestic and foreign cars
- Standard on Porsche, Ferrari
- Increased comfort & safety

For details, list of dealers, write:
KENSINGTON PRODUCTS CORP.
Dept. MT, 240 West 60th Street
New York 23, Phone JUdson 2-9343
Full line of garage lifts available.

READY FOR COMFORT?
Add a PLASTICON hard top

Sure you want the sporty look ... but remember the last time it rained? Lick the weather with a lightweight, removable fiberglass top. Ride in comfort... stay distinctive. Risk a 4¢ stamp for pictures and new low prices for all models.

PLASTICON, INC.
Dept. T, 9721 Klingerman St., El Monte, Calif.
Country's largest manufacturer of sports car tops.

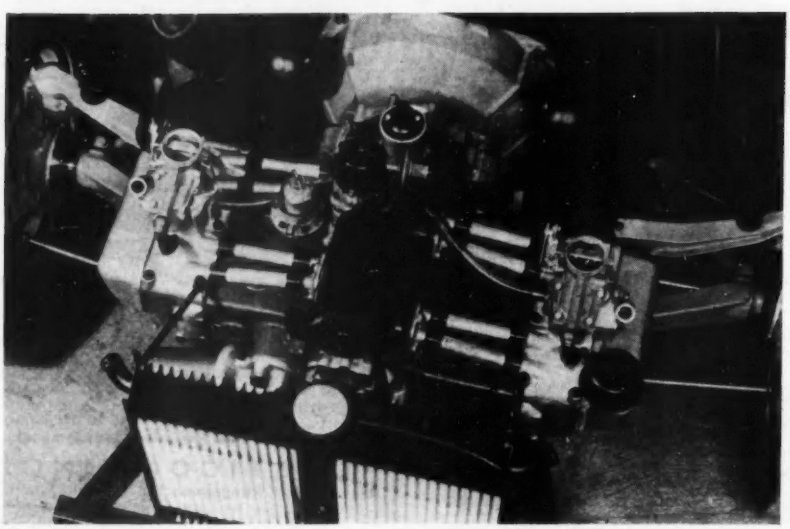


MOTOR TRENDS

Biggest news from abroad in many months is the final decision of Harry Ferguson Research Ltd. of England to go ahead with production of the long-awaited Ferguson car. Based on a station wagon prototype (shown below) styled by Michelotti, the production car will have four-wheel drive, non-locking disc brakes, automatic transmission and fully independent suspension. The flat Four engine (below) develops 90 hp and weighs only 250 pounds. This engine is placed ahead of the front differential but the transmission is behind it. Actual deliveries of the car probably won't be made until 1963, but MT will keep its readers informed with running reports.

The on-again, off-again status of a Corvair convertible for 1962 now seems resolved to the decision that such a body style will not be unveiled this fall. Actual prototypes of such a Chevy compact soft-top have been seen but evidently the Chevrolet brass have ordered against production for fear that the car would conflict with the convertible version of their new middle-size car, the Chevy II.

PROPOSED FERGUSON FOUR-WHEEL-DRIVE CAR



Just about every prototype version of the 1962 Cadillac has carried a feature that won't be on the actual production models, an alternator. This item, presently featured on Chrysler cars, is still being tested by the GM division, but it is a safe bet that it will be standard equipment within another year.

The 1962 Volkswagen has been announced, and its changes are just as startling as in past years. The only external modification will be larger tail- and brake lights. Big news on the inside is the addition of a gas gauge and the consequent elimination of the reserve tank control cock.

What's your favorite car color? Chevrolet officials have announced that 25 per cent of all '61 Chevys sold are white. In second place is beige with 18 per cent.

The auto industry has been saddened with the death of another of its pioneers. Abner Doble, one of the first builders of steam-driven automobiles, died in California this summer at the age of 70.

A useful addition to the rear ornamentation of future Detroit products will likely be a new panic stop light. Of extra-high intensity, this extra light would be a real warning in emergency situations.

An interesting development within the truck industry should be watched by some car enthusiasts. Light diesel engines are to be offered in trucks as small as 2½ tons. The next step could be to pick-ups and then . . .

Chrysler Corporation's parts and accessories division (MoPar) has announced another reduction in the price of seat belts. The company is following a policy of making the belts available to dealers at a non-profit wholesale price and encourages the dealers to pass them on to consumers at similar savings. The current price to the dealers is $5.55.

Willys has just unveiled a gilded version of its popular Jeep. The new "Tuxedo Park" version of the CJ-5 has a convertible top, chrome wheel discs and spare tire cover. It appears to be something out of the dreams of every ex foot-soldier.

There is more than a little speculation that Vauxhall will soon unveil a new small car which is best described as a miniature Tempest. Whether this sub-compact is slated for the U.S. market is still an unknown factor.

The people at Porsche can now be accused of not keeping all four wheels on the ground. Their latest project is a single-seat helicopter powered by an air-cooled, 80-hp Porsche engine.

Amazing acceleration times were posted several weeks ago by Nook Bakewell driving the Arfons Green Monster, which is powered by a surplus J47 jet engine with an afterburner. In 1320 feet, Bakewell's best elapsed time was 7.67 seconds and he passed through the traps at 213.23 mph. Two slightly slower runs on the Fontana, California, drag strip were 7.88 seconds at 201 mph and 7.67 seconds at 196.92 mph. The performance supports the theories, advanced by Craig Breedlove, that a land speed record of 600 mph (MOTOR TREND, August, 1961) is possible on the Bonneville Salt Flats.

There's a new development in power seats looming on the 1962 horizon. At least one manufacturer will offer as an option a seat-adjusting mechanism that will tilt in position by means of a hydraulic pump. The unit will be actuated by a small pump handle at passenger's side. Savings over a comparable power unit are said to be quite substantial.

One reason why Chrysler's compacts, the Valiant and Lancer, won't have convertible models this year is found in the Corporation's plans for big changes in 1963. An all-new body is planned for the two little cars at that time and, therefore, the added expense of offering a soft-top this year was thought unwise.

Contrary to most reports, there will be no major changes for the Corvette again in 1963. The Chevrolet sports car is just doing well enough to stay alive and, should a sporty version of the new Chevy II catch on, it could very well be put into mothballs.

The British Automobile Manufacturers Association has gone to a great deal of trouble to determine the personality of the typical sports car driver. Their finds: He is 34, a college graduate, married and earning approximately $11,500 a year.

RESEARCHED TO KEEP YOUR CAR NEW

Eliminate costly engine repairs with the Cromwell family of scientifically compounded engine additives. ▪ **Cromwell X-3** molecular oil stabilizer stops excessive oil burning. ▪ **Cromwell X-7** cleans and frees sticking valves and lifters. ▪ **Cromwell X-2** prevents sticking valves and lifters and stops automatic transmission slippage. ▪ **Cromwell Upper Cylinder Cleaner and Top Oil** lubricates and prevents rust throughout the fuel system. Add with each tank of gas.

CROMWELL **add at each and every oil change**

366 N. CAMDEN DRIVE • BEVERLY HILLS, CALIF.

AMPLIFIES YOUR VOICE TO 1000 FEET!

Also amazing distant hearing amplifying feature

New all transistorized **SUPER** RANGERHORN amplifies voice to 1000 ft. Boating, camp leaders, scoutmasters, football, baseball coaches, cheerleaders, fairs, picnics, construction — complete public address system. With simple instructions, RANGERHORN can also be used to hear distant sounds and voices beyond normal earshot. Weighs 2 lbs., 10½" long. Replaces $60 to $125 instruments. High quality, molded body and grip, microphone, speaker, latest printed circuits, all transistor. U.S. made, standard batteries, 10-day unconditional money-back guarantee. Made to sell for $29.95. Now yours for only $19.88.
TO ORDER: Enclose check, cash or money order. $2 deposit for C.O.D. Calif. resid. add 4% state tax. Dealers inquire.
ELECTROSOLIDS CORP. 13745 Saticoy St., Panorama City 62, Calif.

$19.88 postpaid complete w/batteries

FIRST ON THE SCENE WITH AUTHORITATIVE FULLY ILLUSTRATED COVERAGE OF SPORTS CAR NEWS!

Here and abroad — every bit of SPORTS CAR NEWS is brought to you — each month — with careful attention to the latest happenings. Up to the minute reports • Technical articles • Photo coverage of all import cars • Comprehensive coverage of sport and competition cars in depth • Competition tuning • Track tests • Technical advice.
Don't miss any exciting issue — subscribe now — 12 issues for $5.00

MT-1061

SPORTS CAR GRAPHIC Magazine 5959 Hollywood Boulevard, Los Angeles 28, Calif.

☐ Bill me later for $5.00 (12 issues)
☐ $5.00 enclosed — send me 2 extra issues — making total of 14 issues of SPORTS CAR GRAPHIC

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

PON

LEADING THE '62 PARADE

by Bob Ames

FOR PONTIAC, 1962 is a year of refinement and facelift. No radical changes have been made in styling, with the profile remaining almost identical while the front, roof line and rear are considerably changed. Under the hood and throughout the chassis there are several new, revised and subtly changed components which are designed to improve ride, handling, durability and overall economy.

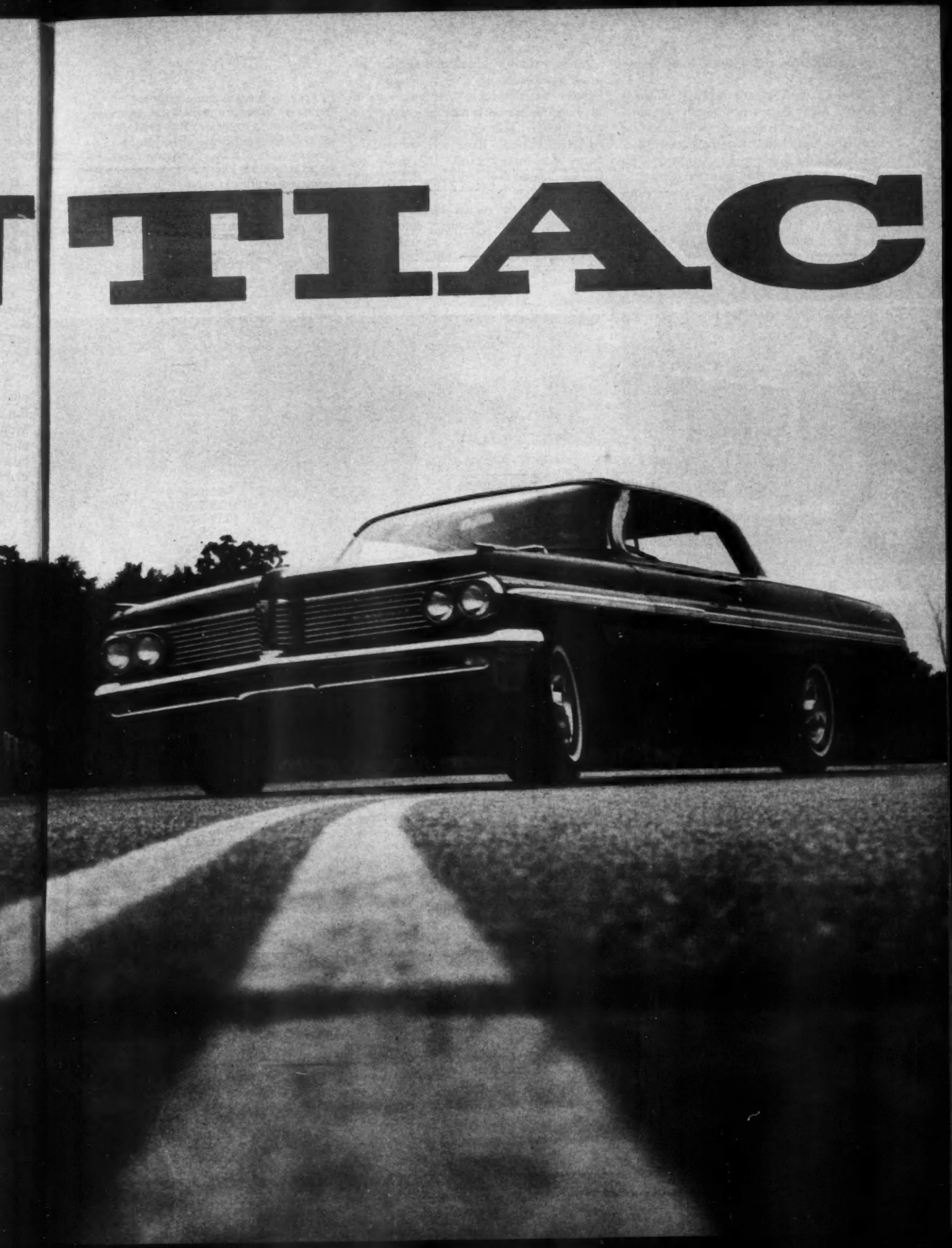
Although Pontiac has four series, as last year, there has been a change in designation. Familiar names to Pontiac enthusiasts are: Catalina, with seven body types, including two- and four-door sedans, two- and four-door hardtops, four-door six- and nine-passenger station wagons and a convertible; Star Chief, with a four-door hardtop and four-door sedan; and Bonneville, with four body styles, including two- and four-door hardtops, a four-door six-passenger station wagon and a convertible. New this year for Pontiac is the Grand Prix, a two-door sports coupe with semi-bucket seats, special appointments and equipment, which replaces the Ventura series, that has been dropped.

The new Pontiac is 1.6 inches longer. Catalina sedans, hardtops and convertibles and the Grand Prix coupe are 211.6 inches in overall length, with Star Chiefs and Bonnevilles measuring 218.4 inches. All three station wagons are 211.4 inches long. Overall width of all models, 78.6 inches, and height, from 54.5 to 56.9 inches, show only minor differentiations from last year.

Styling features have changed, but the overall difference in the car is far from radical. Most distinctive is the new-profiled front end where a horizontal-barred, twin divided grille framed on the outside by dual headlights is directed abruptly forward near the center of the car with the hood and wrap-around front bumper to form a pronounced "V" shape. The revised rear end has two-bulb taillights on the Bonneville and Star Chief series, and a single-bulb on the Grand Prix and Catalina. The new convertible-like metal top design will be offered only on two-door hardtops. In the rear this has simulated ribs and is a very effective method for giving the impression of a convertible soft top.

Back this year is Pontiac's well-known Trophy 425 engine, a 389-cubic-inch ohv V-8 with bore and stroke of 4.06 x 3.75. Standard in the Catalina and Star Chief series is a two-barrel version which produces 215 hp at 3600 rpm and 390 lbs.-ft. of torque at 2,000 rpm, with a compression ratio of 8.6-to-1. The Bonneville's standard engine will also have a compression ratio of 8.6-to-1, but with a four-barrel carburetor producing 235 hp at 3600 rpm with 402 lbs.-ft. of torque at 2,000 rpm. The Grand Prix has as standard a four-barrel carburetor layout, but with 10.25-to-1 compression. It produces 303 hp at 4600 rpm and 425 lbs.-ft. at 2800 rpm. Standard with all three engines is a synchromesh manual transmission.

Optional engines include versions with a 10.75 compression ratio and a triple-three-barrel-carburetor layout. Performance ratings vary from the 215-hp standard engine to a version which produces 348


TIAC

hp at 4800 rpm and 430 lbs.-ft. of torque at 3200 rpm.

Besides the standard manual transmission, a heavy-duty synchromesh transmission and the Hydramatic automatic are available optionally. For the performance enthusiast the four-speed transmission with a floor-shift lever will again be offered.

Pontiac has one of the best selections of axle ratios in production today, and the choice will range from the low 2.56 and 2.69, both RPO's, which are available for the extremely economy-minded owners, to the exotic high axle ratios offered as LPO's for those interested only in performance.

Although several significant refinements have been incorporated into Pontiac's 389-cubic-inch V-8, none of these has made any measurable difference in the performance ratings. Generally speaking, they are all slanted more toward economy than toward performance.

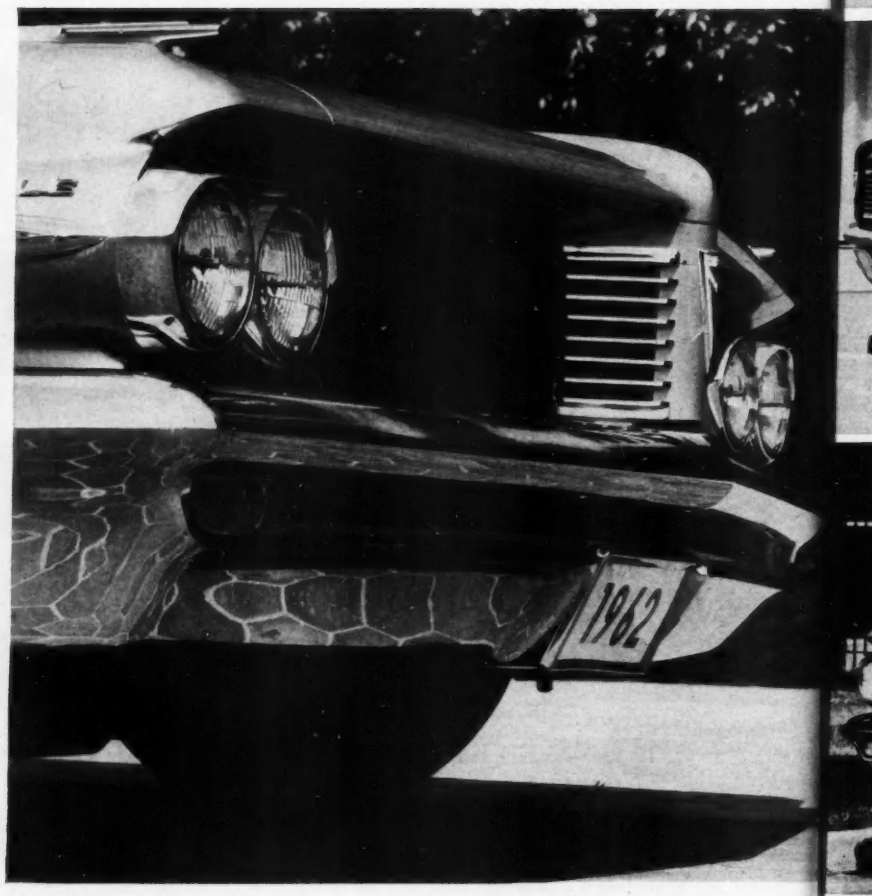
The intake manifolds have a larger exhaust-heated area and new heat transfer fins to increase the heating efficiency of the exhaust gas and thus should provide a faster warm-up period and slightly improve fuel economy. The two-barrel carburetor on the basic V-8 engine with Hydramatic has been recalibrated for better economy and smoothness. All four-barrel carburetors have been revised for better fuel-flow control, and again the emphasis is on fuel economy and smoothness.

Other changes in the engine compartment are generally aimed at smoother operation. Revised engine mounts to improve vibration control and a new throttle linkage, with a cross-shaft to prevent engine movement from affecting the carburetor throttle position, are the most significant alterations.

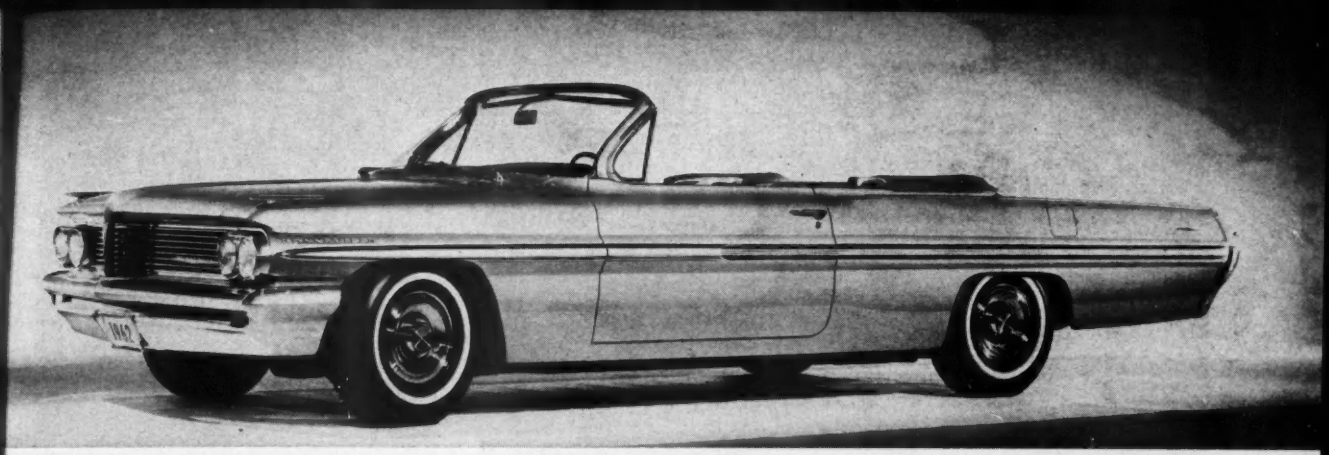
Other mechanical changes in the chassis are also mostly refinements of present components with a few new parts to help improve ride, handling and serviceability.

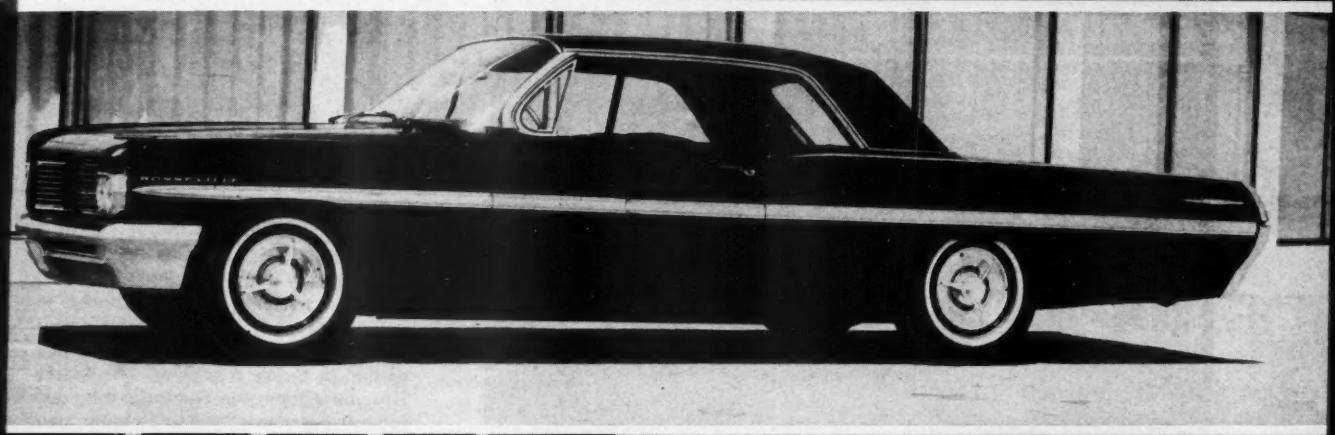
The front suspension system now has tapered, roller-type front-wheel bearings, which previously were found only in police car and heavy-duty-chassis models, are more shock-resistant with better thrust-load capacity. New rubber suspension con-

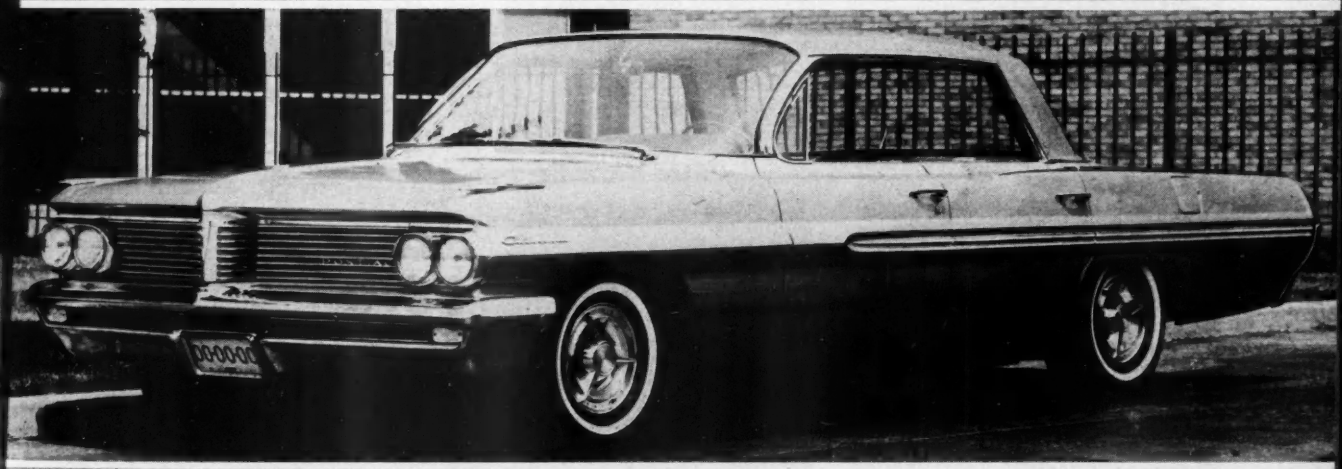
Three pictures below illustrate some of the more significant changes in Pontiac's exterior. The grille with its vee-shaped center piece is probably the most outstanding. The roof line, lower left, clearly shows the simulated ribs for a convertible top. Notice also that the rear quarter offers more privacy for rear seat passengers.

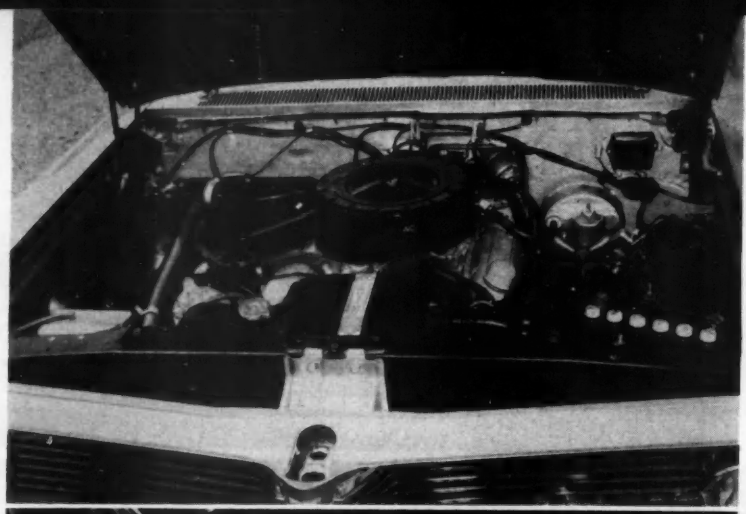


Shown on the right are four different styles of 1962 Pontiacs. From top to bottom: Bonneville convertible, Bonneville, Catalina and Star Chief. Dropped from last year's series designation is the name Ventura, which has been replaced by a new two-door sports coupe with semi-bucket seats, a custom interior and special appointments and named the Grand Prix.





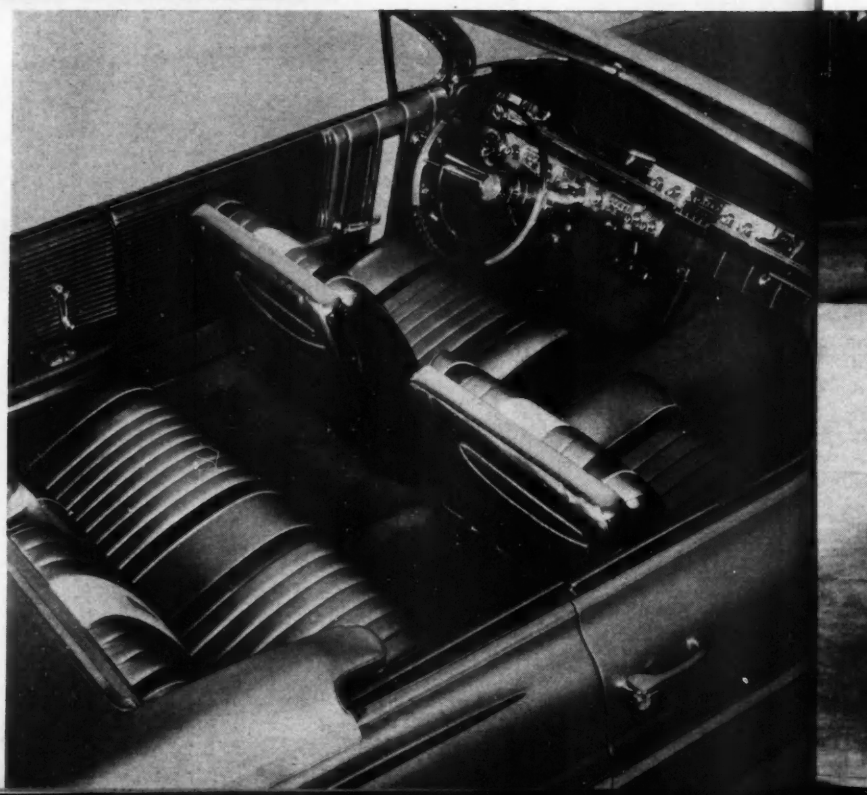




trol arm bushings in both front and rear systems are engineered with increased cushioning capacity for greater isolation of shock and noise created by rough road surfaces. Shock absorber valves have been redesigned and are recalibrated for a softer ride. Car maneuverability has been improved by re-engineering the steering arms and tie rods, resulting in a reduction of three to 3½ feet in the turning diameter.

A slight improvement should be noted in the ride of all Catalinas except station wagons. This year the wheelbase is 120 inches, an inch longer than last year. Star Chiefs and all body types but the station wagon in the Bonneville series are built on the same 123-inch wheelbase. Station wagons retain last year's 119-inch measurement. The new Grand Prix will be built on the 120-inch-wheelbase chassis of the Catalina series.

For better economy of operation a special lubrication grease, installed during the car's assembly, permits Pontiac to recommend an extension of the chassis lubrication up to 35,000 miles under normal motoring conditions. The factory recommendation for crankcase oil drain interval, previously rated at a change after the first 1,000 miles and each additional 4,000 miles, has been changed to a straight 4,000 miles, but only under favorable conditions. Three lubrication economy



Although the exterior styling changes are quite obvious, those inside the passenger compartment and on the dash panel are more subtle. Most significant differences in the 1962 Pontiac are those made in the engine. New manifolds, revised carburetors, engine mounts, and new throttle linkage are among the more important engineering developments. Chassis changes are also refinements aimed for the most part at improving ride, handling and serviceability. One thing that hasn't changed, though, is the exceptionally wide selection of engines, transmissions and rear axle ratios which can be combined to make a Pontiac suit nearly any purpose.

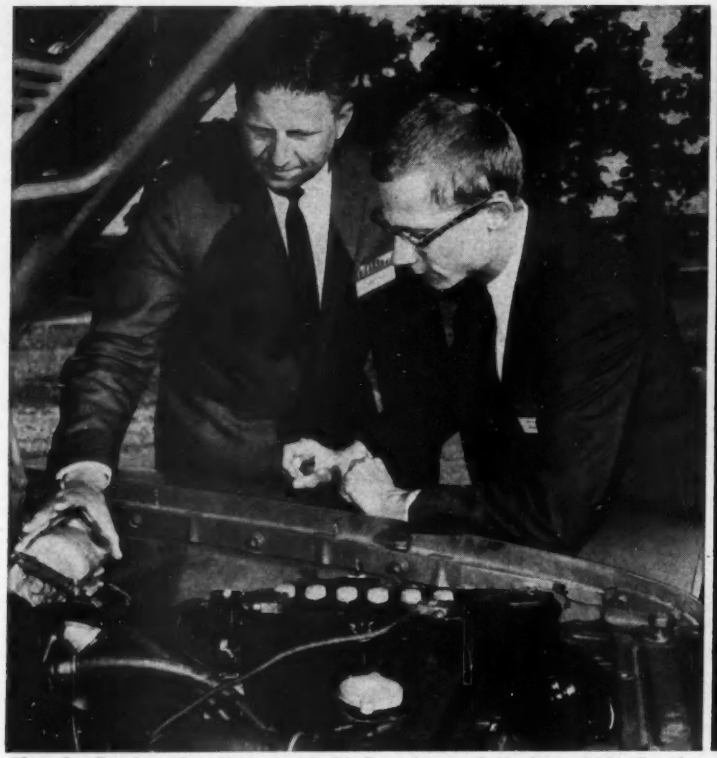
STATION WAGONS WILL BE ONLY PONTIACS ON A 119-INCH WHEELBASE AND WILL BE OFFERED ONLY IN BONNEVILLE AND CATALINA SERIES.

features carried over from last year are a lifetime-lubricated rear axle and synchromesh transmission and a 25,000-mile interval between Hydramatic transmission fluid changes.

Engineering changes in the Hydramatic transmission are minor but will have some effect on quieter operation and durability. One is a slight change in design of gears and an improvement in the gear-cutting techniques during manufacture, which helps to eliminate build-up noise in the rear planetary gearsets. A change in the Hydramatic's oil pump has lowered the operating oil temperature, helping to reduce any possibility of seal damage from overheating during heavy use.

The power brake system has a few changes for safety and to make the system easier to service. The change entails a redesigned power cylinder providing a vacuum reserve chamber within the power unit and integral check valve. The arrangement uses only one vacuum hose and no external reserve tank, which should substantially reduce chances of leakage. Additional safety features include a drain passage with filtered vent to isolate the vacuum and hydraulic systems, plus installing the air inlet filter inside the passenger compartment to prevent entry of road splash.

There are several miscellaneous improvements which are more or less merely subtle refinements but which should contribute to an improvement in either comfort or durability. The frame has been strengthened, front suspension ball joints are new, generators and voltage regulators have been revised for higher electrical loads and distributors now have a wick oiling system for lifetime lubrication. /MT



Chrysler Engineering Manager B. H. Bouwkamp, left, shows MT's Lawlor a few of the under-hood highlights of the new medium-priced 300 series. Four engines, ranging from 305 to 405 hp, will be offered for the car.

INSIDE THE 1962 CHRYSLER

by John Lawlor

A **NEW, MEDIUM-PRICED 300** is the highlight of Chrysler's program for 1962. Entirely separate from the 300-H, which will appear later in the season, the new 300 replaces the Windsor as the make's middle series. It is to be offered in a choice of three body types and four engine ratings.

The Newport, a popular newcomer last year, continues as the lowest-priced Chrysler, while the New Yorker holds its traditional place as the luxury series. And, of course, the 300-H will succeed the 300-G as the highway cruiser of the line.

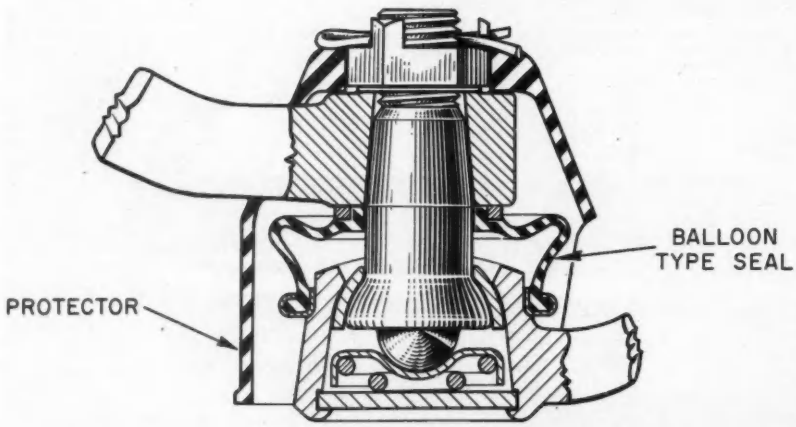
In appearance, the 1962 Chrysler is distinguished by completely new sheet metal at the rear, eliminating the tail fins that have identified the make since 1956. Styling modifications at the front are minor and consist mainly of new grille textures.

Structurally and mechanically, the new Chrysler is similar to the 1961 model. The only basic difference is slightly reduced size for the 300-H. The Newport, 300 and 300-H all have a 122-inch wheelbase. Last year's 300-G measured 126 inches between hubs but, for 1962, only the New Yorker will be stretched that far.

Under the hood is one change of interest to performance enthusiasts: ram manifolding has been dropped as a factory-installed item. The short ram system is still offered but only in kit form and in limited quantity.

Engineering improvements include a smaller, lighter automatic transmission, a vacuum-operated power brake system, the elimination of normal lubrication fittings and several minor refinements in powerplant accessories, chassis details and electrical equipment.

The new 300 takes a place among the Chrysler series roughly equivalent to the Invicta in Buick's line or the Super 88 in Oldsmobile's. It combines its maker's shorter chassis and hottest engine options for a package that stresses maneuverability and high performance. Added to this formula, it has the prestige of the 300



Normal lubrication fittings have been eliminated on all of the new Chrysler products. Ball joints are replenished with lubricant every 32,000 miles while the tie rod ends, illustrated, are permanently sealed at the factory.

Genuine leather upholstery is a feature of the new 300 interior. Front seats have high backs and a fold-down center armrest to simulate buckets. Rear is a normal bench, however. The new series is priced to replace the Windsor.

designation, one of the most glamorous in the industry.

In other words, it is not just the Windsor by another name and does not have the 1961 Windsor's limitation of being little more than a deluxe version of the lower-priced Newport. It has a special appeal of its own, sharply distinguished from that of either the Newport or New Yorker.

One of its strongest assets is typical 300 styling. The new series looks virtually the same as the 300-H, though it does not have the latter's special wheel covers nor, of course, the identifying letter "H" on the nameplate.

Inside, the two cars differ greatly. The new 300 two-door body styles are available with semi-bucket front seats but have benches in the rear. The 300-H continues the feature of four individual buckets divided by a central console. Front seats in the 300-H, incidentally, are individually adjustable this year.

Chassis specifications also vary. The new 300 has the same suspension as the Newport, while the 300-H uses stiffer springs for better roadability at extremely high cruising speeds. There are no plans to offer the 300 with 300-H springing though, if public demand warrants, there could be such an option.

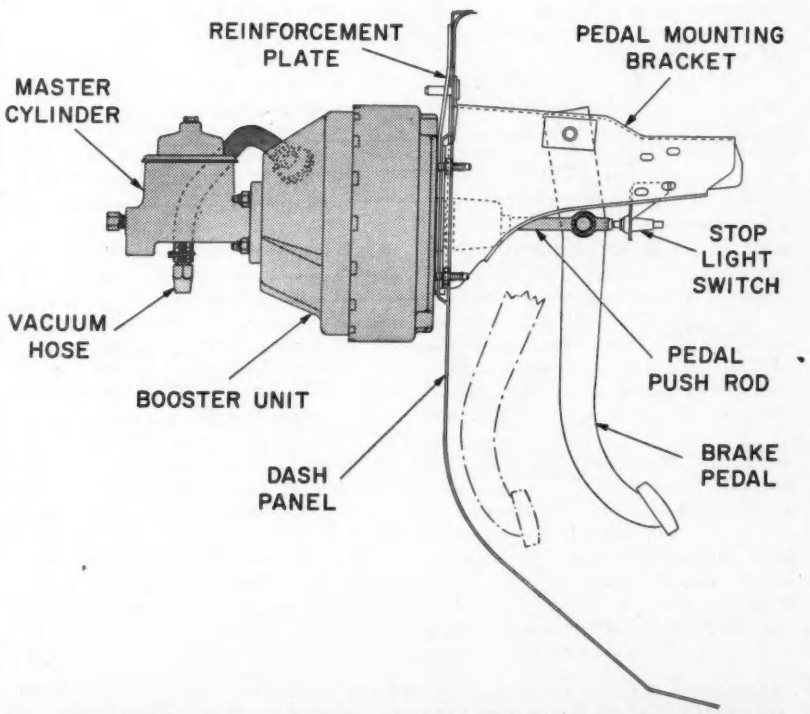
In addition to the traditional 300 body types, two-door hardtop and convertible, the new series includes a four-door hardtop. The 300-H, however, appears only in two-door styles.

The widest body choice is in the Newport, which is available as a two-door hardtop and convertible, four-door sedan, hardtop and station wagon. The New Yorker, caught in price between the two 300's, has abandoned the sportier two-door designs previously offered and now comes only as a four-door sedan, hardtop or station wagon.

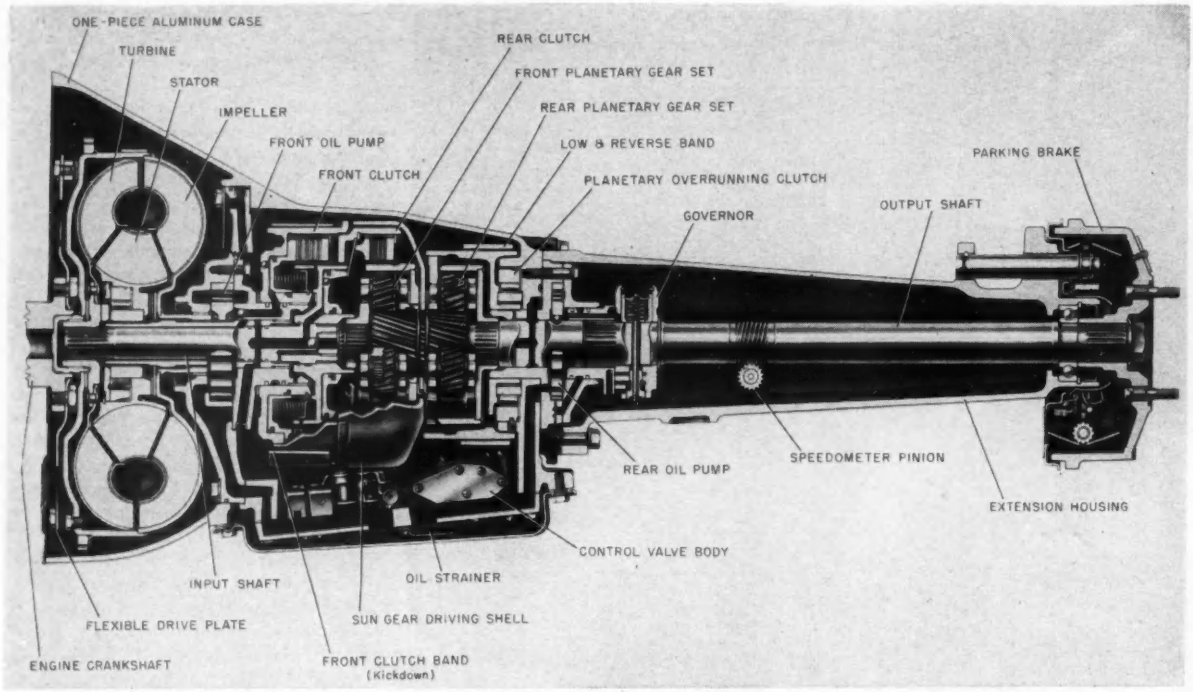
All four series use the basic unit structure introduced by Chrysler in 1960. Overall length is 214.9 inches for the Newport and 300, 215.3 for the 300-H and 219.3 for the New Yorker; and height with a five-passenger load is 55.2 inches for the Newport and 300, 55.5 for the 300-H and 55.4 for the New Yorker. Width is 79.4 inches across the board. Except that the 300-H is 4.5 inches shorter than last year's 300-G, none of these figures is significantly different from its 1961 equivalent.

Styling changes for 1962 are not so much a face lift as a tail drop. The high-flying fins of the past five years have disappeared completely. Door, rear quarter and deck panels are all new and provide smoothly tapered lines with a very modest sculptured effect along the sides.

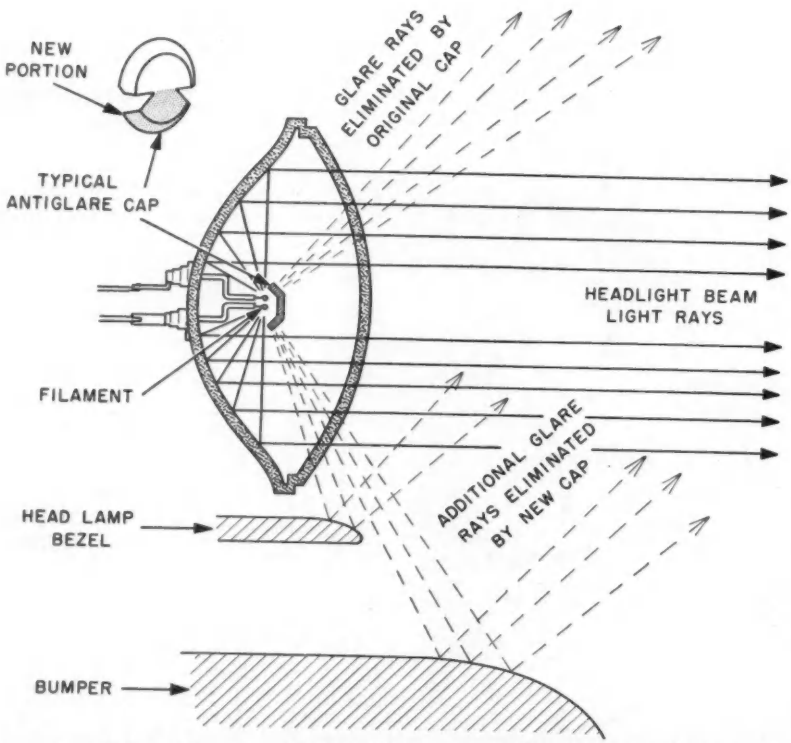
From the cowl forward, however, the sheet metal is repeated from 1961. Only



The power brake's vacuum reserve is maintained within the booster housing so that the separate vacuum tank and hoses are no longer needed. As shown, the power unit is mounted handily between pedal linkage and master cylinder.



A completely new automatic transmission, incorporating a torque converter and three-speed gearbox, has replaced the familiar Torqueflite. The new unit operates in the same manner, however, and has similar pushbuttons on the dash.



An enlarged filament cap for the sealed-beam headlights reduces the downward rays that reflect on the bumper and other polished surfaces to cause glare in foggy weather and impair further the driver's limited view of the highway.

the grilles show any change. The Newport has a design of square holes while the 300, 300-H and New Yorker have diamond patterns and a pair of bold crossbars. On the 300 and 300-H, the surface of the grille is painted black and on the New Yorker, it is brightly anodized.

Each series also has distinctive side trim. The Newport features a chrome strip the full length of each side panel, the 300 and 300-H a strip from the front door to the rear quarter and the New Yorker moldings along the crest of the side and quarter panels and around the wheel wells. And each has its own emblem on the rear quarter, three castles on the Newport, a circular medallion on the 300 and 300-H and a set of chrome louvers on the New Yorker.

Interior changes include restyled seat fabrics, door panels, armrests and hardware. Still featured is the complete set of electroluminescent instruments housed beneath a clear plastic dome.

The high-backed driver's seat is continued. The semi-buckets offered in the new 300 consist of high-backed seats for both driver and passenger, separated by a folding armrest in the center. This arrangement is standard in the 300 convertible and optional in the two-door hardtop.

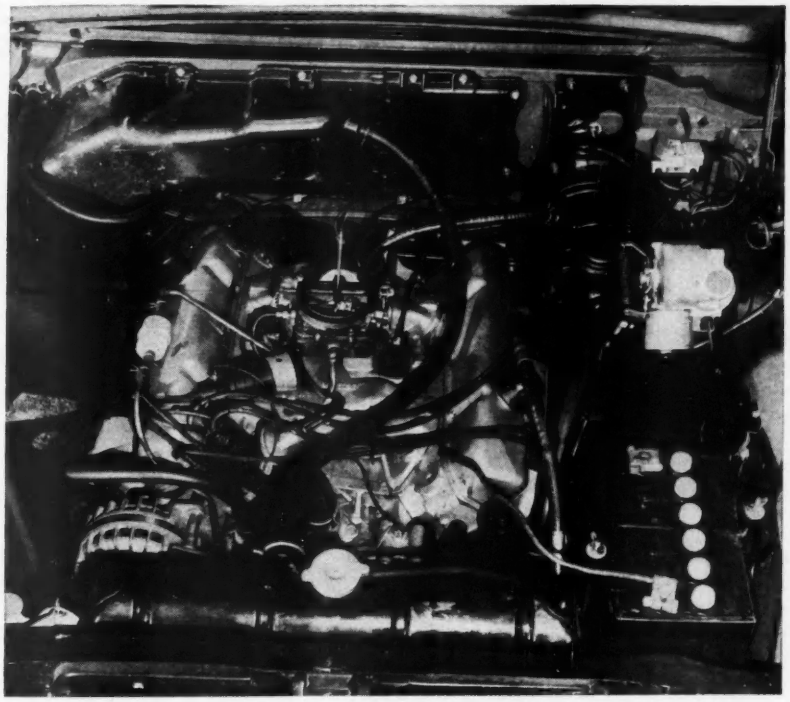
The 1962 Chryslers have no startling innovations in powerplants, though some of the rated outputs have been modified and, as already mentioned, ram induction is being de-emphasized.

The Newport has the same 265-hp, 361-cubic-inch engine offered last year, equipped with a single two-barrel carbu-

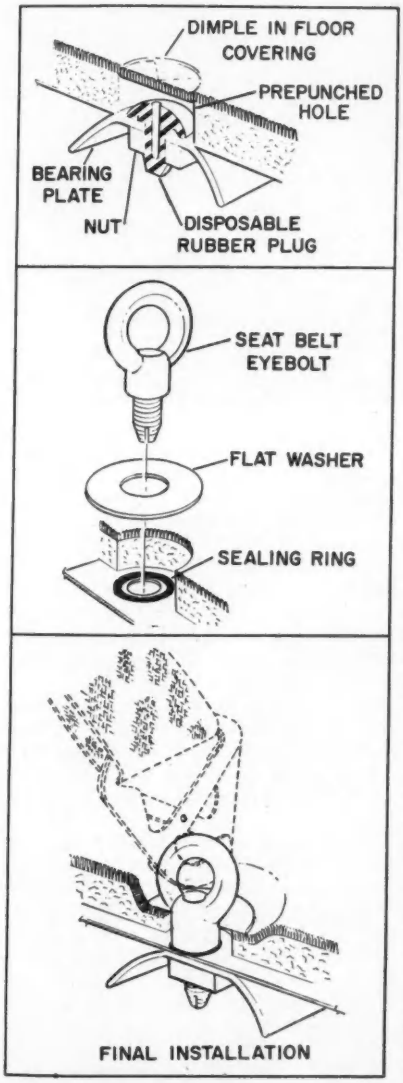
retor and 9-to-1 compression ratio. The basic block is the same as the biggest unit announced for the 1962 Plymouth and Dodge.

Standard in the new 300 is the 305-hp, 383-cubic-inch job with single two-barrel carburetion and 10-to-1 compression used in the 1961 Windsor. However, the big feature of the 300 engine line is a series of performance options based on the 413-cubic-inch block borrowed from the senior Chrysler series.

The first of these is the 340-hp with a single four-barrel carburetor and 10.1-to-1 compression ratio also fitted to the New Yorker and Imperial. This particular engine produces 10 hp less than its counterpart last year because of a new camshaft designed more for quietness and durability than for power.



Standard powerplant for the new 300 is a 305-hp, 383-cubic-inch V-8. Others available in the car include 340-, 380- and 405-hp units of 413 cubic inches.



Seat belt anchors are standard in the new Chrysler, as in most 1962 cars. The eye-bolts can be easily installed.

Next is the 380-hp, 300-H unit, which has dual four-barrel carburetion and 10-to-1 compression. This replaces the 375-hp engine of the 300-G and uses a normal runner manifold instead of the long ram tubes. Other features include low-restriction air cleaners, special camshaft and valve springs, mechanical valve gear, dual exhausts, heavy-duty radiator and torque-limiting fan drive.

Finally, there is the short ram kit which adapts to the 340-hp unit and boosts it to an estimated 405 hp. It consists of two four-barrel carburetors on a short ram manifold, 11-to-1 compression ratio, special camshaft and mechanical valve gear, dual headers and exhausts, plus various minor modifications for top performance.

With the 265-, 305- and 340-hp engines, a manual floor shift is standard and a brand-new automatic transmission optional. With the 380-hp, the automatic is mandatory.

The new automatic is similar to Torqueflite but is smaller, lighter and simpler. One of its biggest advantages is its size, which allows a reduced floor hump. It has a 2.45 first and 1.45 second and is operated with the familiar push-buttons at the left side of the dash. The 1962 Plymouth and Dodge V-8's use the same unit but Chrysler, unlike its lower-priced corporate brothers, has not equipped it with a parking pawl.

Another engineering feature of interest is the vacuum-suspended power brake system. The booster chamber is kept evacuated by engine vacuum and one side of the booster diaphragm is exposed to the atmosphere to provide boost when the brakes are applied. This eliminates the need for a separate vacuum tank and its attendant plumbing.

Normal lubrication fittings have been eliminated from all points on the front suspension and steering linkage. These are pre-lubricated at the factory and need replenishing only once every 32,000 miles.

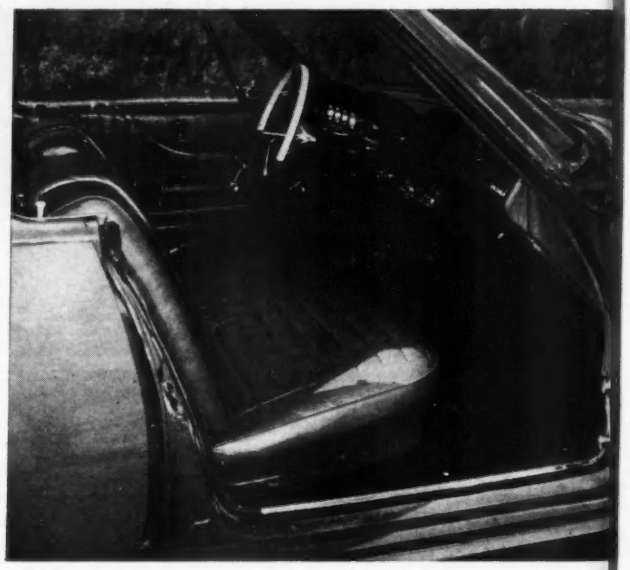
Changes under the hood include a deeper cooling fan, which allows the use of a smaller, lighter radiator without sacrificing cooling efficiency; a new starter with a built-in reduction gear for greater starting torque and a starter motor which turns twice as fast yet is about half the size of last year's version; an aluminum-encased distributor on the 361- and 383-cubic-inch engines, as well as the 413-cubic inch; and breaker points that are ventilated for longer life.

Softer rubber bushings are used at the upper end of the front shock absorbers to minimize the particular noises of the shocks in cold weather.

Several refinements have been made in the electrical system. Wiring passing through the firewall is channeled into a single connection. The lights, ignition and other equipment are literally plugged in from the engine compartment side. The fuse block is located under a protective cover in the glove box. For convenience, markings on the block indicate the circuit served by each fuse. /MT

First look at the 1962 DODGE

There's a brand-new idea behind the design of this year's Darts and Polaras



COMPLETELY REDESIGNED, the 1962 Dodge features not only new styling but also a new concept. It is smaller than any senior design its maker has offered in years, 7.5 inches shorter than the 1961 Dart, for example; yet it retains traditional big-car standards of comfort and performance.

The new Dodge is offered in two basic lines, the Dart and Polara 500. The Dart is subdivided into three series: plain Dart, Dart 330 and Dart 440, replacing last year's Seneca, Pioneer and Phoenix, respectively. The Polara 500 shares the Dart's fundamental components but is a distinctive, personalized car stressing luxury and power.

Many details of the styling are derived from the Lancer and Valiant though, of course, the big Dodge has completely different proportions. A relatively long hood and short rear deck, capped by a squarish roof line, give the car a somewhat European look.

The new structure is fully unitized, incorporating most of the framework previously bolted on ahead of the cowl. The only separate member still used is a K-shaped support for the engine and part of the front suspension.

Despite reduced overall size, many interior dimensions have actually been increased. Front foot room, for example, is improved by placing the whole engine-transmission assembly lower and further forward. And a new compact automatic transmission for V-8 engines causes a smaller floor bulge.

Other engineering refinements include a new starter, distributor, throttle controls and manual column shift, plus redesigned power brakes and manual steering. Maintenance is reduced by sealed lubrication points and self-adjusting brakes. And for greater passenger comfort, several important changes have been made in the heating and ventilating system.

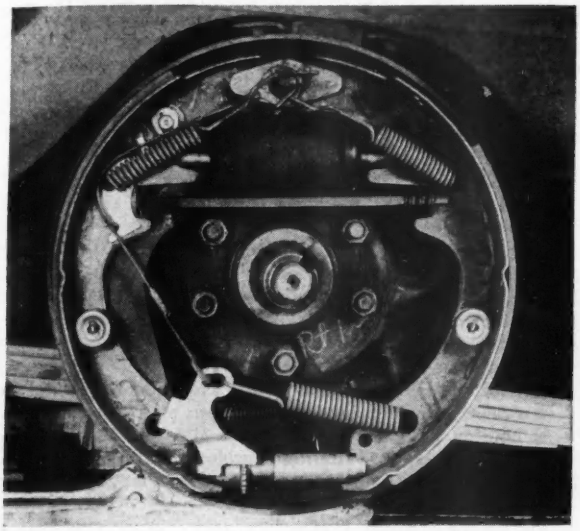
Dodge's engine selection is continued from last year, though without the biggest performance options. Suspension, consisting of front torsion bars and rear semi-elliptics, is also repeated.

The lowest-priced Dart competes at the bottom of the big-car market with a two- or four-door sedan and a four-door, six-passenger wagon. Emphasizing a theme of economy, interiors in this series are simple and functional.

The Dart 330 appears as a two- or four-door sedan, two-door hardtop and four-door, six- or nine-passenger wagon. Inside, it features an effect of simulated individual seats with a large vinyl saddle at the center of the seat back. The saddle is lighter in color than the rest of the upholstery and carries a vulcanized emblem.

Aimed at the top of the regular low-priced class is the Dart 440, which is available as a four-door sedan, two- or four-door hardtop, convertible and four-door, six- or nine-passenger wagon. The 440 has split front seat backs, individual bolsters and a fold-down center armrest, providing the style and comfort of bucket seats while retaining the practical advantages of a normal bench.

The Polara 500 climaxes the Dodge line for 1962 and is offered as a two-door hardtop or convertible. It is not so much a successor to last year's Polara, which was a conventional medium-priced car, as it is a new competitor for the Ford Thunderbird and Studebaker Hawk. The 500's separately-adjustable front seats are true buckets, divided in the center by a console housing a locking storage compartment, dual ash trays

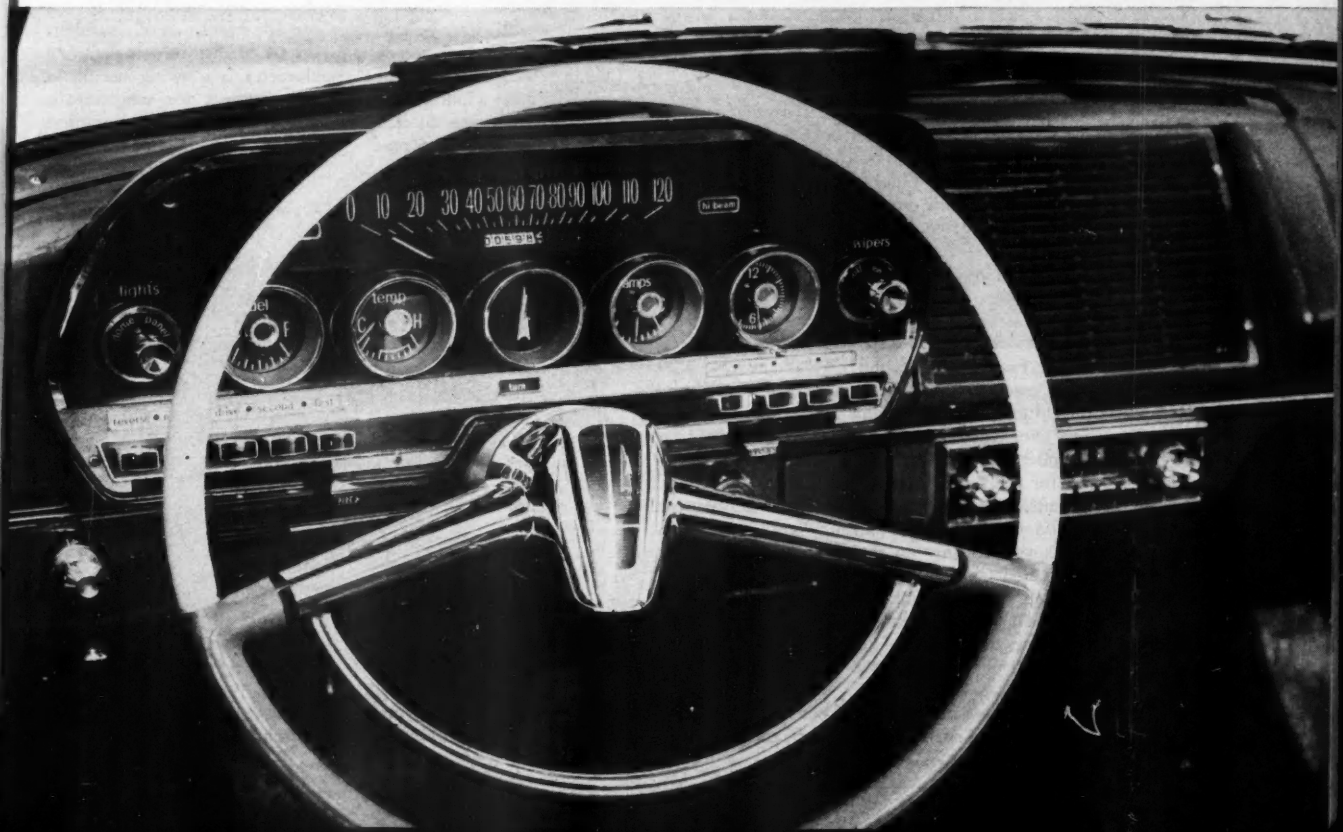


The Dodge brakes for 1962 are self-adjusting. Braking in reverse actuates the mechanism, which sets proper clearance between the shoe and drum and takes up slack caused by wear.

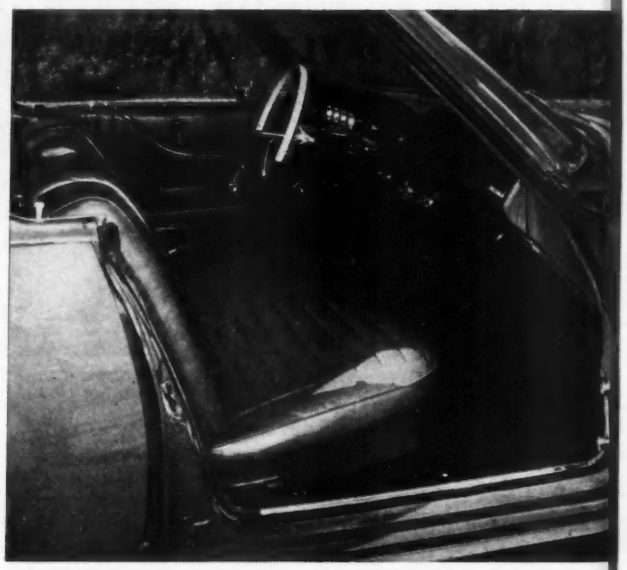
Plush interior of the Dart 440 is upholstered in laterally-pleated vinyl. Folding armest in front converts bench to separate seats.

Front torsion bars are continued but now incorporate sealed ball joints, pre-lubricated for 32,000 miles of normal highway driving.

A CLEAN DASH PANEL IS FEATURED. FOR MAXIMUM LEGIBILITY, THE DIALS HAVE BLACK FACES, WHITE NUMERALS AND RED POINTERS.



First look at the 1962 DODGE



There's a brand-new idea behind the design of this year's Darts and Polaras

COMPLETELY REDESIGNED, the 1962 Dodge features not only new styling but also a new concept. It is smaller than any senior design its maker has offered in years, 7.5 inches shorter than the 1961 Dart, for example; yet it retains traditional big-car standards of comfort and performance.

The new Dodge is offered in two basic lines, the Dart and Polara 500. The Dart is subdivided into three series: plain Dart, Dart 330 and Dart 440, replacing last year's Seneca, Pioneer and Phoenix, respectively. The Polara 500 shares the Dart's fundamental components but is a distinctive, personalized car stressing luxury and power.

Many details of the styling are derived from the Lancer and Valiant though, of course, the big Dodge has completely different proportions. A relatively long hood and short rear deck, capped by a squarish roof line, give the car a somewhat European look.

The new structure is fully unitized, incorporating most of the framework previously bolted on ahead of the cowl. The only separate member still used is a K-shaped support for the engine and part of the front suspension.

Despite reduced overall size, many interior dimensions have actually been increased. Front foot room, for example, is improved by placing the whole engine-transmission assembly lower and further forward. And a new compact automatic transmission for V-8 engines causes a smaller floor bulge.

Other engineering refinements include a new starter, distributor, throttle controls and manual column shift, plus redesigned power brakes and manual steering. Maintenance is reduced by sealed lubrication points and self-adjusting brakes. And for greater passenger comfort, several important changes have been made in the heating and ventilating system.

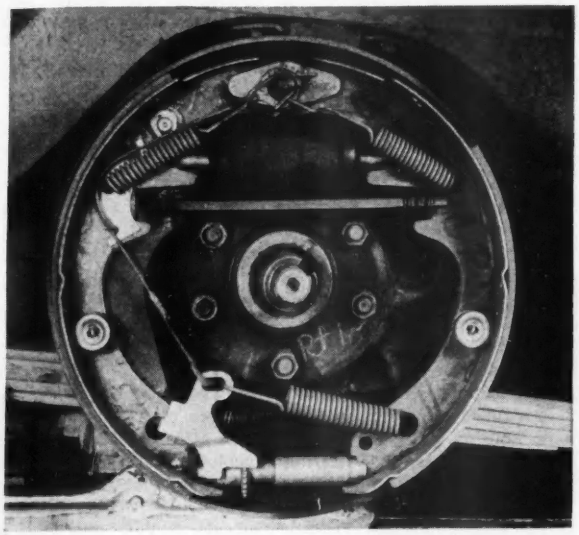
Dodge's engine selection is continued from last year, though without the biggest performance options. Suspension, consisting of front torsion bars and rear semi-elliptics, is also repeated.

The lowest-priced Dart competes at the bottom of the big-car market with a two- or four-door sedan and a four-door, six-passenger wagon. Emphasizing a theme of economy, interiors in this series are simple and functional.

The Dart 330 appears as a two- or four-door sedan, two-door hardtop and four-door, six- or nine-passenger wagon. Inside, it features an effect of simulated individual seats with a large vinyl saddle at the center of the seat back. The saddle is lighter in color than the rest of the upholstery and carries a vulcanized emblem.

Aimed at the top of the regular low-priced class is the Dart 440, which is available as a four-door sedan, two- or four-door hardtop, convertible and four-door, six- or nine-passenger wagon. The 440 has split front seat backs, individual bolsters and a fold-down center armrest, providing the style and comfort of bucket seats while retaining the practical advantages of a normal bench.

The Polara 500 climaxes the Dodge line for 1962 and is offered as a two-door hardtop or convertible. It is not so much a successor to last year's Polara, which was a conventional medium-priced car, as it is a new competitor for the Ford Thunderbird and Studebaker Hawk. The 500's separately-adjustable front seats are true buckets, divided in the center by a console housing a locking storage compartment, dual ash trays

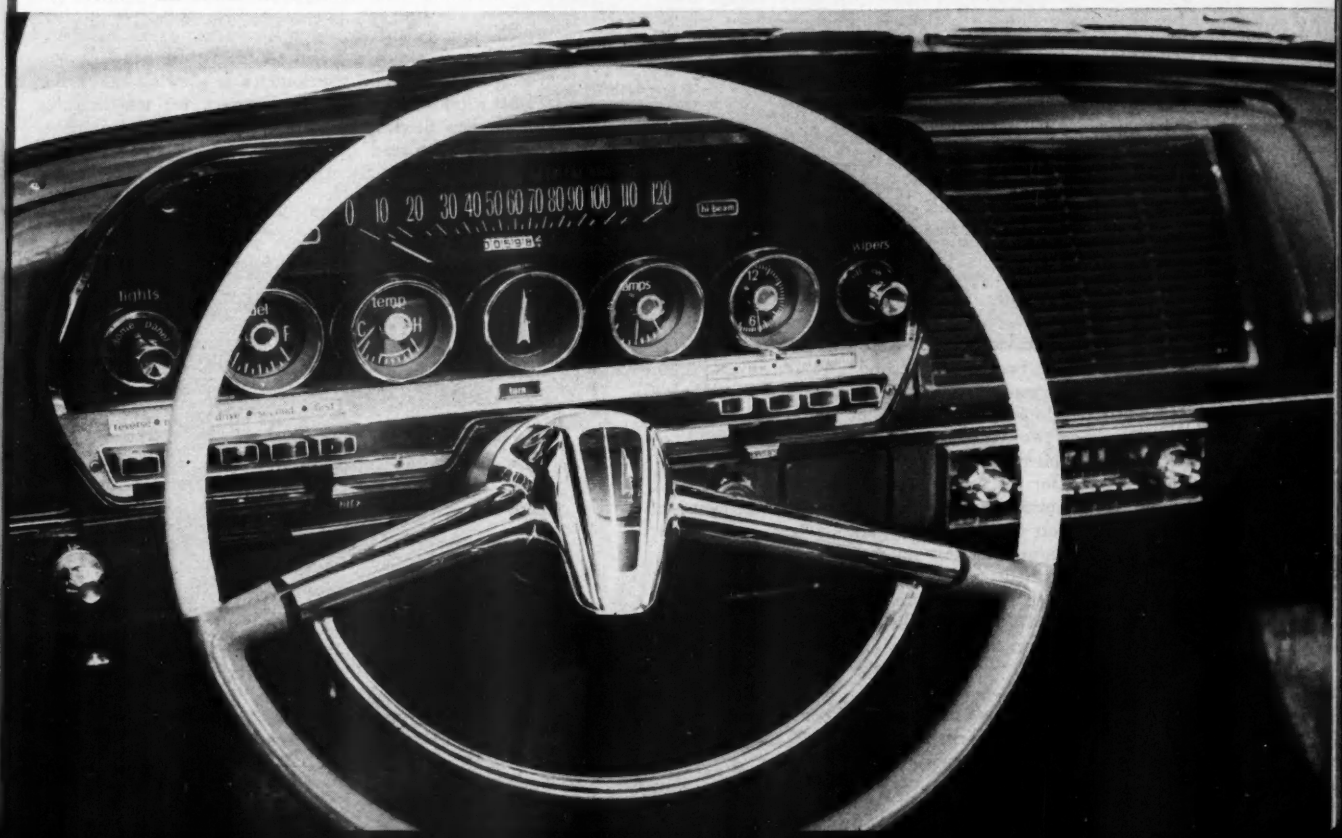


The Dodge brakes for 1962 are self-adjusting. Braking in reverse actuates the mechanism, which sets proper clearance between the shoe and drum and takes up slack caused by wear.

Plush interior of the Dart 440 is upholstered in laterally-pleated vinyl. Folding armest in front converts bench to separate seats.

Front torsion bars are continued but now incorporate sealed ball joints, pre-lubricated for 32,000 miles of normal highway driving.

A CLEAN DASH PANEL IS FEATURED. FOR MAXIMUM LEGIBILITY, THE DIALS HAVE BLACK FACES, WHITE NUMERALS AND RED POINTERS.



and a courtesy light. The rear seat is a bench padded and trimmed to resemble the front buckets.

All four 1962 Dodge series are mounted on a 116-inch wheelbase, two inches shorter than last year's Dart and six inches less than the 1961 Polara. The car's overall length is 202 inches in sedan, hardtop and convertible styles and 209.9 inches in wagon form. Width is 76.5 inches and height approximately 54 inches.

These measurements are all less than their equivalents for the 1961 model, yet front headroom and legroom have been increased. In the two-door hardtop, the rear seat is roomier as well, because that body type now uses the same shell as the two- and four-door sedans and four-door hardtop.

Weight has been reduced 200 pounds or more, depending on body, so Dodge can claim improvements in both performance and economy without any major changes in engines.

The 145-hp, 225-cubic-inch Six continues as the top economy offering. Equipped with a single-barrel carburetor and an 8.2-to-1 compression ratio, it follows the slanted layout introduced two years ago. The block is cast iron, though a similar powerplant made of aluminum is optional in the compact Dodge Lancer. The Six is available in all bottom-line Darts, all Dart 330's but the nine-passenger wagon, and all Dart 440's but the four-door hardtop, convertible and wagon.

The standard V-8 is the 230-hp, 318-cubic-inch unit with single two-barrel carburetion and 9-to-1 compression. This same engine is also available in a 260-hp version, with a power package featuring a four-barrel carburetor and dual exhausts.

Optional in the Dart but standard in the Polara 500 is the 305-hp, 361-cubic-inch V-8 with four-barrel carburetion, 9-to-1 compression, special camshaft and dual exhausts. This is the top performance engine that Dodge has announced for 1962. Last year's 383- and 413-cubic-inch powerhouses with Chrysler-based blocks and ram induction manifolds are not listed.

Several refinements have been made in external engine components. A new starter has a built-in reduction gear for greater starting torque. A new aluminum-encased distributor features ventilated contact points for cooler operation and, consequently, longer point life. And an aircraft-type throttle linkage of flexible cable has replaced the older lever system for steadier, quieter control and longer wear. In both the starter and throttle linkage, the need for periodic lubrication has been eliminated.

With the V-8 engines, a new automatic transmission replaces both two-speed Powerflite and three-speed Torqueflite. It is similar to Torqueflite in operation but entirely different in construction. Both the 11.75-inch torque converter and three-speed gearbox are housed in a one-piece aluminum case, providing a smaller, lighter assembly than the previous unit. Despite a 60-pound saving in weight, however, the torque capacity of the converter has been increased 10 per cent. Gear ratios are unchanged; first is 2.45, second 1.45 and reverse 2.20.

Basically, the new transmission incorporates the lessons Dodge learned while developing the lightweight automatic introduced for the Dart Six two years ago. The latter is continued, of course, for six-cylinder versions of the new model.

A new feature for the senior Dodge is a sprag which locks the automatic transmission output shaft to the extension housing, serving the function of a so-called parking "gear." Last year, such a device was provided only on the compact Lancer.

The sprag supplements a new parking brake, which consists of a mechanical cable linkage acting on the rear wheels rather than the drive line. The system is engaged by a foot pedal and unlocked by a knob on the dash. To reduce the chance of accidental release, especially by children, the knob requires a long, deliberate pull.

Dodge power brakes have been modified considerably. Engine vacuum keeps the booster chamber evacuated and, when the brakes are applied, one side of the booster diaphragm is exposed to atmospheric pressure to supply the power boost. This eliminates the need for extra tanks and vacuum hoses. The power unit is mounted in two halves on the firewall, between the pedal linkage and master cylinder, making it easier to install and service.

Automatic adjustment is another braking innovation for Dodge this year. As the car is driven in reverse and the brakes are applied, a built-in mechanism takes up any slack due to lining wear.

Lubrication fittings have been removed from the ball joints, steering linkage connections and clutch torque shaft bearings. These points are all pre-lubricated and sealed at the factory. Each has a plug which can be removed when lubrication is required. And that, according to Dodge, is only once every 32,000 miles.

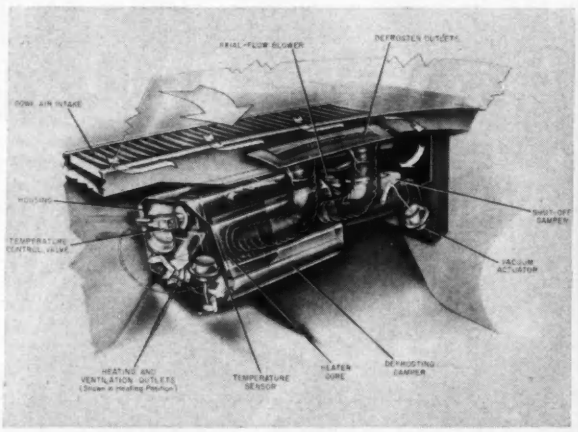
The manual steering gear is now of recirculating ball design and is one more component that has been placed in an aluminum housing. The steering linkage has also been changed. Pitman arm, idler arm and steering knuckle arms all move through similar arcs, maintaining steering effort at a more consistent level from lock to lock.

On manually-geared Dodges, the shift linkage now uses a tube running down the inside of the steering column. This increases rigidity compared with the usual systems of external shifting rods and eliminates the extra floor openings needed for rods.

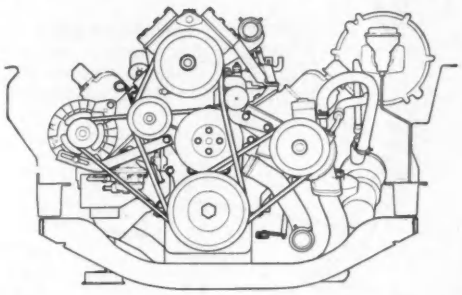
Heating, defrosting, ventilating and air conditioning have all been sharply improved in the 1962 Dodge. A new blower, which is actually a single-stage axial compressor, provides much more efficient control of interior temperature. It should be particularly beneficial for ventilating. Instead of depending on the forward motion of the car to force air into the passenger compartment, the blower supplies a constant flow. It circulates fresh air even when the vehicle is slowed or stopped.

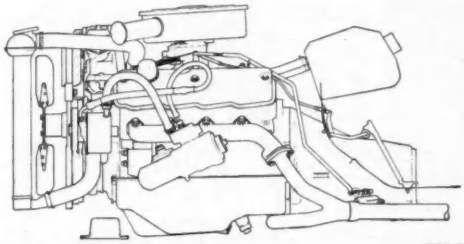
The heating and air conditioning systems have been designed to be interchangeable this year, so that installation of air conditioning is simpler and easier. It can be fitted by the dealer to either the Six or V-8.

Temperature controls are located at the right side of the instrument cluster, balancing automatic transmission pushbuttons at the left. In between is a new set of instruments designed for increased legibility. The speedometer is a swing needle in a horizontal window above circular gauges for temperature, fuel and amperage. Black faces, white numerals and red pointers make the dials easy to read. /MT

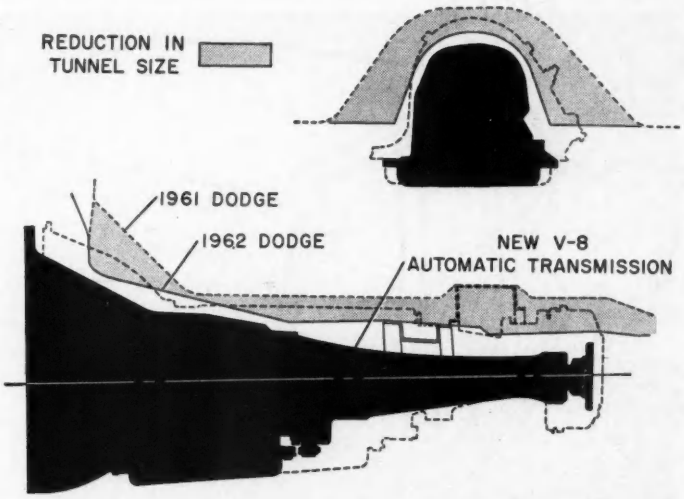


Key to Dodge's all-new ventilating system is an axial-flow blower, visible between the two defroster outlets. Fresh air is circulated even when car is not in motion.

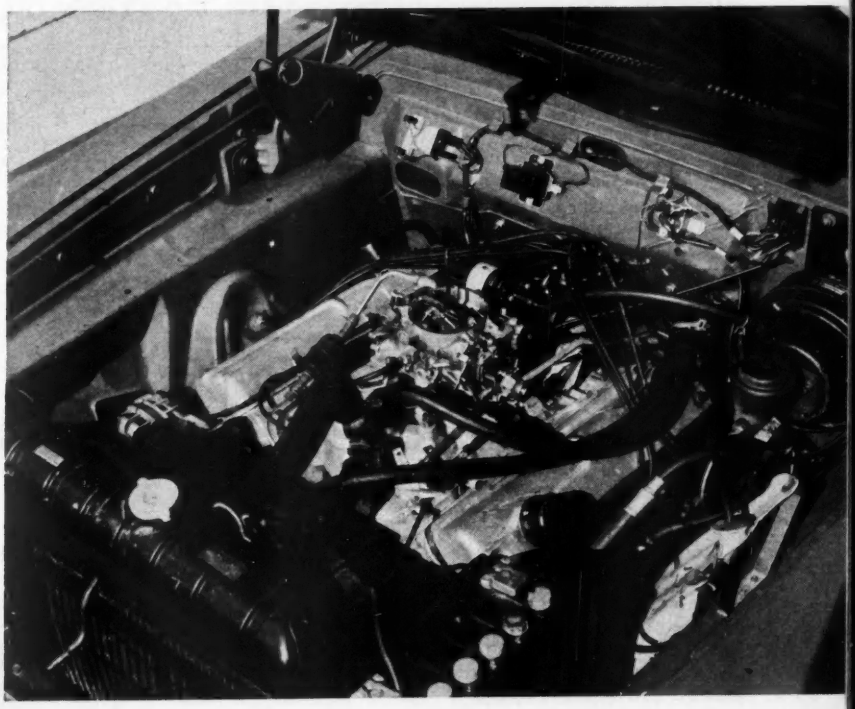




Standard 318-cubic-inch Dart V-8 has 230-hp, two-barrel carb setup. Also offered is 260-hp, four-barrel option.

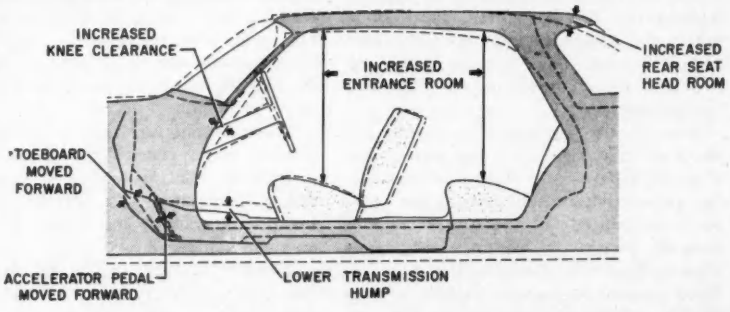


NEW THREE-SPEED AUTOMATIC IS SMALLER, LIGHTER THAN TORQUEFLITE.

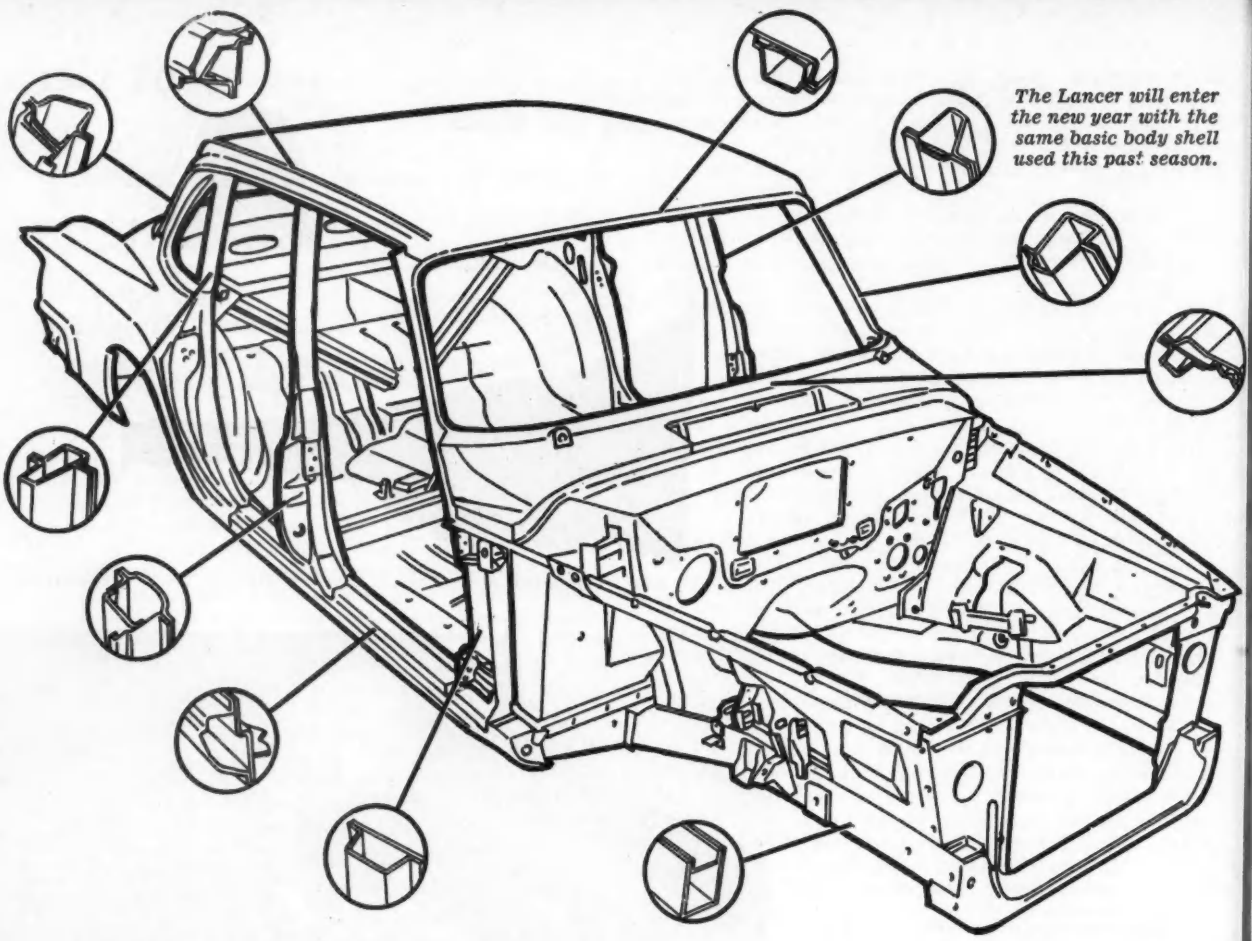


Ram induction will not fit under the lower hood of the new Dart and has been dropped as an option. Hottest engine in the 1962 line is a 305-hp, 361-cubic-inch V-8 with four-barrel carburetion and dual exhaust system.

A natural result of the 1962 Dart's smaller size is reduced trunk space, though dimensions are wide and deep.



NEW BODY, THOUGH SMALLER OVERALL, HAS IMPROVED FRONT SEAT SPACE.



The Lancer will enter the new year with the same basic body shell used this past season.

LANCER *variations for 1962*

A **STYLISH NEW SPORTS COUPE** tops the Lancer offerings for 1962, as the Dodge compact enters its second season with only detail refinements. Called the Gran Turismo, the addition to the line is a distinctive two-door hardtop with an all-vinyl interior featuring bucket seats.

The GT, as it is bound to be known, replaces the 770 hardtop as the glamor car in the Lancer catalog. Both the 170 and 770 series now consist simply of two- and four-door sedans and four-door station wagons.

Few of the engineering changes are startling, but many are significant. For example, Lancer joins Valiant in pioneering extended lubrication among the compacts. Introduced last year on several big cars, this convenient feature is now available to those who prefer smaller vehicles. Other points of interest include a concentric column shift to replace the previous floor lever, a new manual steering gear, modified suspension, two-ply tires, a new starter with built-in reduction gearing and various smaller changes in the ignition and fuel systems and in electrical equipment.

The choice in powerplants continues from last year. The 170-cubic-inch Six is standard, while the 225-cubic-inch aluminum version of the same basic engine is available as an option in the 770 and GT. The bigger unit, because of its light-metal block, actually weighs 45 pounds less than the smaller, standard job fabricated from cast iron.

Transmissions are also carried over without major change, though the ratio of first in the manual unit has been altered. It is now 2.95, instead of 2.71, for quicker getaway and greater efficiency on steep grades.

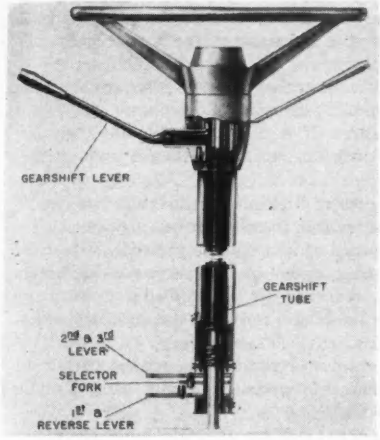
Another gearing switch appears with the combination of the 225-cubic-inch engine and automatic transmission, which now drives through a 2.93 axle in place of last year's 3.23.

For interior styling, the GT is the star of Lancer's 1962 show. The bucket seats are pleated and are complemented by a bench in the rear trimmed to match them in appearance. Vinyl is used for the seats, door panels and even headlining.

In the 770, the upholstery is the same double-knit nylon featured last year, finished in a biscuited design and trimmed with vinyl. Door panels are also vinyl, patterned to match the seats. The lowest-priced 170 offers a nylon-faced fabric in sedans and a plain vinyl in wagons.

Dodge avoids frequent lubrication on the new Lancer by pre-lubricating and sealing the ball joints, steering linkage connections and clutch torque shaft bushings at the factory. The ball joints have plugs that are supposed to be removed once every 32,000 miles to allow lubrication, while the tie rod ends and clutch torque shaft are sealed for life.

The new manual shift uses a hollow tube inside the steering column jacket to



The manual floor shift of last year's Lancer has given way to a concentric column without external shifting rods.

Beneath the restyled dash panel is a printed circuit for instrument wiring. The interior shown here is a 770 sedan with double-knit nylon upholstery finished in a biscuited design and vinyl door panels in a matching pattern.

transmit gear lever motions to the transmission linkage. The tube is concentric with the steering shaft and requires no external shift rods. The factory claims its action is just as positive as the floor shift used in the 1961 Lancer.

The manual steering now features a recirculating ball design in a die-cast aluminum housing. The overall ratio of the steering system has been increased from 23.8-to-1 to 28.8-to-1 to reduce the amount of driver effort required.

Front suspension control arms have been redesigned for lower weight and easier manufacture though, fortunately, without changing the Lancer's excellent suspension geometry. Front shock absorber bushings and jounce bumpers are now larger, softer segments of rubber to reduce harshness. Other springing modifications include a reduction of ride rates at the wheels of about five per cent for a slightly softer ride.

A new item of equipment that is certain to be talked about is the two-ply tire. The type chosen for the New Lancer is identical in size and load rating to the four-ply used in 1961 and features rayon cord. According to Dodge, the new tire flexes more easily on bumpy roads and provides a smoother, quieter ride. It is also lighter, thus reducing unsprung weight somewhat.

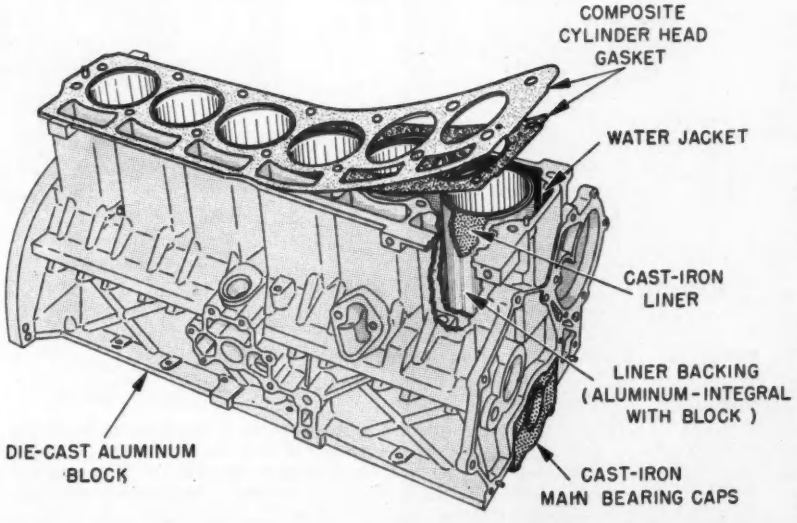
And, to continue quoting the factory, the two-ply tire develops less interply friction, so it runs cooler at highway cruising speeds.

The Lancer's new starter is a device found across the board on Chrysler products for 1962. Simpler and lighter than the unit it replaces, it has a reduction gear of 3.5-to-1 between the motor armature and the ring gear drive pinion. Its key advantage is greater starting torque at low cranking speeds.

The biggest change in the ignition system is a ventilated design for the contact points. This results in cooler operation for more even distribution of electrical contact and longer point life. And a new condenser provides more effective electrical arc quenching.

Better filtration is a feature of the fuel system and the tank capacity has been increased from 13 to 14 gallons.

New electrical equipment includes a single connection for wiring passing through the firewall, increased use of fuses to protect circuits and a printed circuit for the instrument cluster. And the headlights have larger filament caps to reduce the downward rays that reflect off bumpers and other bright trim to cause a distracting glare in foggy weather. /MT



Though the Lancer's optional 225-cubic-inch engine is similar to the regular Dart Six, it features a die-cast aluminum block. The Dart's is made of iron.

IMPERIAL

THE BIGGEST of the big cars, the Imperial by Chrysler, enters the 1962 season with a trimmer look and a stronger emphasis on owner convenience.

Though the new Imperial is a continuation of last year's basic design, it achieves a sleeker appearance by retracting its tail fins to belt-line level; they no longer swoop upward. And the roof line is cleaner because the recessed area above the side windows is no longer outlined with a heavy molding. The roof panel is unchanged, however. At the front, a split grille is new and revives a theme the make used in 1955 and 1956.

Familiar identifying touches include free-standing dual headlights, gunsight taillights cresting the fins and downward-tapering side trim.

Among the 1962 Imperial's engineering refinements, one that will be particularly appreciated by the owner is the elimination of normal chassis lubrication fittings. The ball joints and tie rod ends are equipped with seals that retain lubricant and exclude dirt, water or other foreign matter.

In place of the usual grease nipples, the ball joints have plugs that are removed to allow lubrication every 32,000 miles. The tie rod ends are sealed for life and need only an occasional check to be sure they are not damaged.

Other features of technical interest include a new automatic transmission to replace Torqueflite and redesigned power brakes, along with modifications in the camshaft, cooling, exhaust, starter, distributor, wiring, fuses, headlights and shock absorber mountings.

The new automatic is considerably smaller than Torqueflite, allowing a reduction in the size of the front floor pan hump for increased foot room. It functions like the earlier unit but the internal arrangement is entirely new and the case is a one-piece aluminum casting that houses both the torque converter and three-speed gearbox.

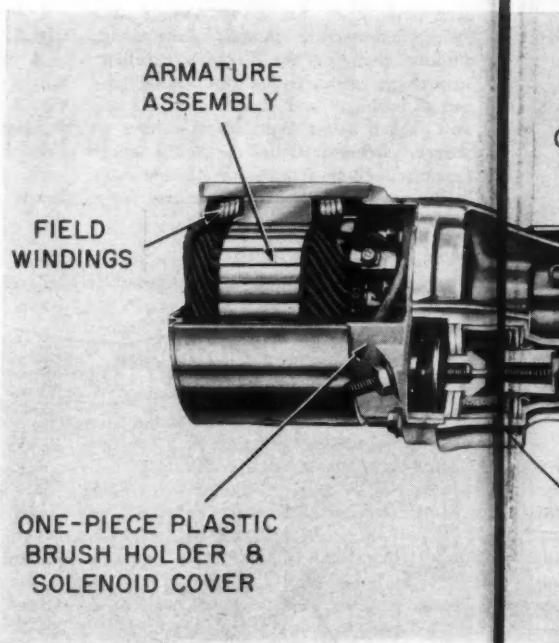
Basically, it is a transmission that benefits from the compact but highly-efficient automatic Chrysler Corporation developed for the Valiant and Lancer. It is 60 pounds lighter than last year's Torqueflite, for example, yet has a 10 per cent greater torque capacity.

The new vacuum-suspended braking system is another case of increased efficiency. The booster chamber of the previous power brake layout was maintained at atmospheric pressure. When the brake pedal was depressed, one side of a single power diaphragm was vacuum exhausted, reducing air pressure. Air pressure on the opposite side of the diaphragm provided the necessary difference in force.

In the 1962 version, vacuum reserve is maintained within the booster housing, so that the separate vacuum tank and its plumbing are eliminated.

As in the past, the Imperial is powered by the same 413-cubic-inch engine used in the Chrysler New Yorker. However, it is now rated at 340 hp, a drop of 10 hp compared with 1961, because of a new camshaft designed for smoother, quieter operation, rather than maximum power output. The basic engine specifications, including a single four-barrel carburetor and 10.1-to-1 compression ratio, are unchanged.

However, there have been some interesting modifications in exterior powerplant components and accessories. The cooling fan now has a projected depth of two inches, an increase of only



Luxury is keynote of 1962 Imperial Le Baron interior. A new starter, above, features built-in reduction gear but retains solenoid shifting device for positive engagement.

one-quarter of an inch but enough to allow a reduction in the size and weight of the radiator yet provide better cooling when idling or moving in slow traffic.

The Imperial has reverted to a single exhaust system for all body types but the Crown convertible. Though a dual exhaust has definite breathing advantages, it is more expensive to maintain.

The single system runs hotter and, for that reason, is not as subject to corrosion. Hence, it lasts significantly longer. And when it does wear out, only one replacement muffler and resonator are needed, instead of two, cutting the cost of replacement literally in half. Chrysler feels that this is more important to the luxury car owner than the slight gain in exhaust efficiency provided by a dual system.

The starter is completely new and features a built-in reduction gear and positive engagement. The gear places a ratio of 3.5-to-1 between the armature and ring gear drive pinion, causing an overall ratio of 45-to-1 between the armature and the engine crankshaft. This is more than twice the 19-to-1 ratio of the previous starter.

As a result, there is greater starting torque at low cranking speeds and reduced current draw under heavy loads. And, because the starter runs much faster, it has greater rotational inertia for increased starting reliability under severe operating conditions.

Ventilated contact points are now a feature of the distributor. The points run cooler and electrical contact is more even, reducing wear and requiring less frequent need for adjustment or replacement.

A multi-circuit connector is used for all wiring passing through the bulkhead. Wiring inside the passenger compartment terminates at the connector, which projects into the engine compartment. Lights, ignition, accessories and other electrical equipment is simply plugged in from the engine side.

To protect the electrical system, fuses are used more extensively this year. They are grouped in an accessible block under the dash. Each fuse is marked with its proper current rating, and the circuit it protects is indicated on the block.

Caps on the headlight filaments have been enlarged to reduce stray downward light rays which reflect from the bumpers and other polished surfaces to cause glare in mist or fog.

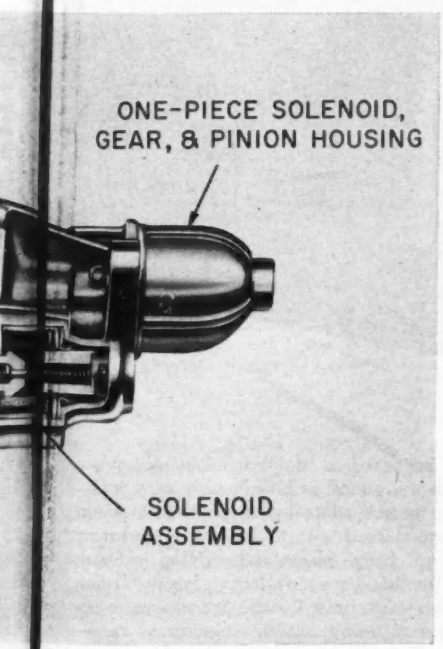
The shock absorbers have larger, softer rubber bushings at the front and softer bushings at the rear. These are intended to isolate the structure from the noise of shock absorber action. They also reduce the amount of road harshness transmitted to the passenger compartment.

Imperial series designations and body offerings are all carried over from 1961. The Custom is available as a two- or four-door hardtop, the Crown in those two styles plus a convertible and the top-of-the-line Le Baron as a four-door hardtop only.

Except for variations in nameplates, the three series have the same exterior styling. The main differences are inside. The Custom's upholstery is cloth, trimmed with vinyl and finished in wide vertical pleats. The Crown offers cloth or leather with very narrow vertical pleats. Leather is standard in the Crown convertible and optional in the hardtops. Finally, Le Baron interiors are high-quality cloth, leather or a combination of both, in a pattern of interesting vertical and horizontal pleats.

Interior features continued in all series include the high-backed driver's seat and squared steering wheel. The dash is also carried over from last year without change. Instruments are centered in front of the driver and have electroluminescent lighting for legibility at night without glare. /MT

unashamed to be big and bold



Bold-looking cockpit is continued from last year with few modifications. Though dash is opulently designed, it features complete instrumentation.

Preview

THE BEST-KEPT SECRET of the 1962 model year was concocted not in Detroit, but in South Bend, Indiana. The finest automotive writers, experts, analysts, engineers — and even the sharpest spies Detroit could hire — have been wrong. In fact, they've seldom been so far off base.

At the time this is written there are at least a dozen published sources confidently predicting a four-cylinder, sub-compact Studebaker. They are wrong. This project is shelved — to be saved for a later date.

There are just as many sources predicting the demise of the Hawk. They are wrong. There will be a 1962 Hawk. This is the biggest surprise of the year. But the new Hawk goes one better — it is one of the wildest styling jobs since fins first paralyzed Detroit's designers.

The story of how I happened to be the first outsider to see and drive the 1962 Hawk is almost as unbelievable as is Studebaker's keeping the car as well concealed as detailed drawings of America's latest space ships. It has to do with a fouled-up schedule, four minutes to change planes and arriving in South Bend without luggage so that I couldn't leave anyway. Trying to make the best of some extra time, I called Studebaker to see if there was any chance of seeing a 1962 engineering car — either the 1962 engine, transmission, suspension, etc., under a 1961 body style; or, a 1962-styled body on 1961 running gear. Rarely at this time of year is a 1962 body with 1962 running gear available.

In mid-summer it usually isn't too difficult for a writer to get a chance to drive a car with the 1962 running gear if there

of the New

STUDEBAKER HAWK

by Bob Ames

Studebaker's new president, Sherwood H. Egbert, right, surprised even the experts with the new Studebaker Hawk, which was an entirely unexpected development.

are few changes. Almost impossible for any outsider to see — let alone drive — is a 1962 body style.

Apparently it was a week of confusion everywhere — plane schedules in Chicago and visiting firemen's schedules in South Bend. What I expected to see was an engineering model, with the 1962 power train under a 1961 Lark. Instead, the garage man at Studebaker's proving ground pulled the canvas cover off a styling prototype of the 1962 Hawk.

For a car that was supposed to have died this year, the Hawk was very, very much alive.

For an automotive writer who was supposed to know all the answers, I was very, very surprised.

This story and the pictures with it are the result of this

mixed-up schedule and asking a few guarded questions.

Speaking from a visual standpoint, the 1962 Hawk will be the most changed domestic car this year. The greenhouse is all new and is the most striking change. It is squared off, with sheet metal along the rear quarters for semi-privacy. The rear window is full width and cants forward. This is an excellent method for keeping rain or sleet off the rear window and has been a strong advantage in some imports. It is also plain that rear seat headroom is maintained with the nearly flat top of the greenhouse.

Up front the hood has been lengthened — visually perhaps — and smoothed out. The grille is reminiscent of both Packard and Mercedes-Benz. A familiar feature from last year's Hawk is the simulated air scoop on the hood. No pictures were permitted of the front or rear, except for the hastily taken action shots, simply because neither was finalized yet.

Of course, the major dies have been determined, and no sweeping overall changes will be made. What still had to be decided on the front, for instance, were minor trim details. In front this focused on two details: the air scoop and two small indentations (not visible in the pictures) on either side of the grille and slightly above the bumper. The questions were: should the air scoop have a splash of chrome on the leading edge, and should the indentation be covered with a matching grille, left blank or filled with sheet metal?

This gives the person with good imagination a chance to second-guess Studebaker's stylists before they make up their minds. No one at Studebaker knew, nor could anyone else safely predict, what choice would be made. The prototype was jet black, and I personally feel that the chrome and small grille would add to the car. Those who feel differently will be able to see exactly what the engineers did in next month's MOTOR TREND, when the official announcement story of the Hawk is published.

The Hawk is sticking to single headlights this year. Even the blurred action shot is enough to show that not only is the overall appearance helped — there simply wasn't any place to install duals.

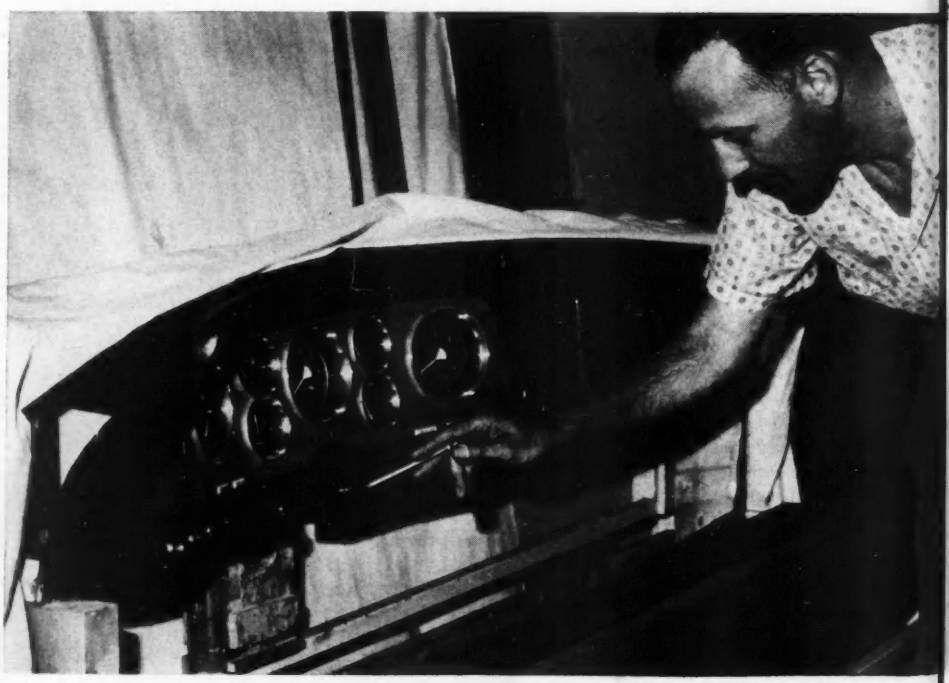
No pictures showing the rear view of the Hawk are available. But in its way it is just as striking as the front. The rear deck lid is smooth and flat, looking longer than it actually is because of the reverse cant of the rear window. The rear has been chopped off square, and a grille runs almost the entire width. Fins, as can be seen in several pictures, have disappeared entirely. The fender line extends from the headlights to the taillights in a smooth, unbroken line, accented by a chrome strip. Finishing off the exterior are chrome gravel protectors on the wheel wells, plus a wide strip amidships. Not only is this a decorative touch, but it will protect the Hawk's finish in several vulnerable spots.

Observant individuals by now will have noticed that in the pictures there are a few places where the chrome doesn't seem to fit precisely. The very observant may notice that a piece of chrome actually appears to be missing in the shot where I am seated. Actually, the top guide and seating strip for the window is gone. This was a working prototype and the piece was probably off for minor changes, measurements, or at the patternmaker's.

But the really well-informed individuals who have been scrutinizing the pictures have probably decided by now that the interior shown is that of a 1961 Hawk. They are right. At the time the pictures were taken the 1962 interior, although almost finalized, had yet to be installed inside a 1962 body. Since the final plans have been decided upon, the interior can be pretty well described. This, along with the picture of the instrument cluster in final design form, is as much as anyone at Studebaker knew.

The passenger compartment layout will be quite similar to the 1961 version, with bucket seats. A console was considered but decided against early in the design. It is extremely doubtful if one would — or even could — be incorporated now.

The dash and instrument cluster are going to be revamped considerably, although the present instruments will simply be rearranged. To get a preview of the layout — which wasn't finalized — I had to go to Studebaker engineering. Pictures were permitted — if an engineer stood obscuring the right side, which wasn't complete. As can be seen, Studebaker is sticking to its familiar, easy-to-read gauges. A clock is on the right,



Design of the new Hawk instrument panel was still in preliminary stages when this picture was taken. Basic layout will be as shown except for minor details still subject to approval.

Unusual picture shows 1962 Hawk prototype being driven during extensive tests made at Studebaker proving grounds. Weaving lines are guides for test driver.

speedometer in the center, and the tachometer on the left. The whole affair is curved like an airplane cockpit, and the finish will be simulated wood on metal.

Overall, the new Hawk has a very European flavor, but to think the major influences on the 1962 Hawk are European would be a mistake. It is as American as apple pie. More than any other car, the Hawk owes its new look to the Packard Predictor, a 1956 prototype that more than lived up to its name. This car had swivel seats, individual buckets, console with radio and electrical accessory switches, plus provisions for transaxle, independent rear suspension and torsion bar springing. Since then every one of these features has appeared on one or more Detroit cars.

Since the car driven and observed had a 1961 chassis, none of the changes in engineering can be reported on. But from the picture of the Packard Predictor with this article, the styling debt is obvious. The greenhouse, for example, is nearly identical except for the portholes. The straight lines of the fenders minus the fins, and the rear deck smoothed out are both obvious in the new Hawk.

Aside from the remarkably well-kept secret of the new

Crisp lines of new Hawk are shown in this picture. Roof line is patterned on 1956 Packard Predictor.

1956 Packard Predictor was a major influence in the design of the 1962 Studebaker Hawk. Many "futuristic" components of this car are standard equipment on modern cars.

Studebaker Hawk *continued*

Hawk, there is another aspect of the car which is equally as startling. On April 10, 1961 there were no plans to change the Hawk at all. It would be brought out as it was, or not at all. The plans on April 9 were to introduce a slightly modified Hawk with trim changes only for model year identification. And the new Hawk is not a 1963 body style pushed up one year. Actually and literally, nothing had been planned.

Anybody who knows the automobile business at all can tell you that if a car is not practically finalized in design, dies in process and materials ordered by January of the preceding year, there isn't a chance that it will be ready by fall. Anybody, that is, but someone who is new to the game or exceptionally determined.

In February of this year Studebaker got a new president, Sherwood H. Egbert. He is new to the automotive business, and on the face of existing evidence also an exceptionally determined man. Immediately after taking over at Studebaker, Egbert took a quick swing around the country visiting as many Studebaker dealers as possible. At that time, late in March, the four-cylinder sub-compact Studebaker was still high on the priority list and the fate of the Hawk in doubt.

To see how the groundwork was laid for the biggest surprise of the 1962 model year it is only necessary to examine two answers to questions put to Egbert. The first concerned the four-cylinder small-small car.

Egbert answered, "We are continuing . . . to perfect it, test it, prove it, put it on the shelf and use it as soon as is practical."

The second question concerned the 1962 models. Egbert answered, "Obviously, there is little that I can do as far as styling of the car goes, since this has long been committed. We made a few refinements in it when I saw it, but that is very small."

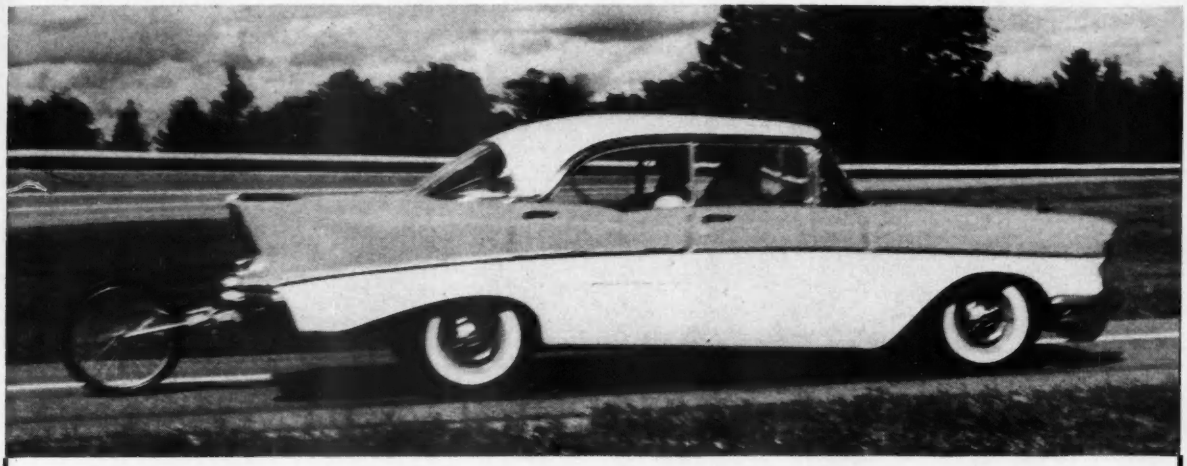
The mistake everyone made was to believe the second statement and discount the first as publicity subterfuge. Now it is plain the first statement was fact, the second, subterfuge. Two weeks later, work on the new Hawk began. And it is obvious Egbert had more than a little to do with it.

But even more than his word, Egbert's past life is a good example of what will happen to Studebaker's cars in the future. Frankly, and proudly, he admits that he came from the wrong side of the tracks and earned his only degree in the school of hard knocks. Egbert is also frank to admit another belief of his: that "success is through people, not through methods and machines."

A six-foot four-inch, self-made dynamo, he looks more like a football player than a head of a large automotive corporation. Egbert started as a common laborer for Boeing Aircraft in Seattle and rose to be their youngest executive by the time he was only 20. After a stint with the Marines in World War II, he joined McCulloch Corporation, Los Angeles, in 1946 as a purchasing engineer. He rose through the ranks to vice-president in 1951 and to executive vice-president and a director in 1956.

Now that he is heading Studebaker, the question is what changes will this make in the Studebaker cars? The answer is obvious. His past life is characterized by hard work, energy and boundless enthusiasm. In the few months he has been running the company the cars have already changed — and it is only natural to assume that they will change more in the future. Studebaker and its new president may make a lot of other successes in a business way, but one thing is sure. Studebakers in the years to come will be far different cars from what they are today. /MT

Interesting design feature is found on the rear window. Roof edge projects past the rear window pane, creating a protective lip against rain, sleet and other hazards.



ARE CAR BRAKES GOOD ENOUGH?

by Dean Parker

FOR THE LAST TEN YEARS the sports and foreign car enthusiasts in general have been blasting the braking systems on American passenger cars. They say our brakes are not adequate for the job they have to do, not reasonably safe even in normal driving — and downright dangerous under "heavy-duty" conditions. All this time our U.S. auto industry engineers have been continually *improving* braking systems. Any unbiased scientific test will show a generally higher level of brake performance today than ten years ago. And yet the criticisms seem as loud as ever.

A brake is nothing more than a device to convert the "kinetic energy" of a car's motion into *heat*. Basic physical laws say you can't destroy energy, so when energy is subtracted from the car itself (by slowing it down) this same energy has to be added somewhere else — in this case in heat in the brakes. The amount of this heat addition can be calculated on the slide rule quite closely. For instance, the heat generated in stopping a 4,000-pound car from a speed of 80 mph would be enough to boil a gallon of water in six or seven seconds. In other words, engineers know pretty much what they're dealing with here.

There are several very basic problems in the design of any conventional drum-type automotive brake:

Perhaps the toughest is the problem of maintaining a high retarding force on the wheel as the brake temperature builds up. A friction of the brake lining against the drum surface is a critical factor. We can use a soft, high-friction lining to get excellent brake action under light-duty conditions; but then these linings will tend to lose their friction (due to chemical changes and charring) as temperatures go over 400-500° F. under rough conditions. If we use "hard" lining to give good high-temperature braking the friction is low when the brakes are cool, so you need to apply much more pedal force in normal, easy braking. We can compromise these two extremes somewhat by spending more *money* on the lining material.

Another important factor in brake performance at high temperature is drum *distortion*. As the drum heats up it expands and distorts in odd ways, so the linings don't make even contact all around. This not only reduces the total retarding force, but it overheats the lining in certain areas and cuts the friction still further. There's a lot we can do to reduce distortion through proper *design* of the drum: careful use of ribs, fins, flanges, extra thickness (or thinness) here and there, etc. can reduce the distortion problem 100 per cent. Detroit has made tremendous progress in this area in the last ten years.

The problem of brake *balance* will always be tough. To get the maximum total theoretical braking force on the car, the amount of braking force applied to each wheel must be roughly proportional to the weight pressing down on that wheel. The gimmick here is that there is a lever effect caused by the car's momentum when it decelerates that acts to lift weight off the rear wheels and throw it on the front end. The harder the braking, the more weight is transferred. Take a car with 55 per cent of its weight on the front wheels when standing still. On a normal, easy stop about five per cent of the weight would transfer forward, and we'd have 60 per cent on the front brakes. But on a hard panic stop you'd end up with 70 *per cent* of your weight on the front wheels. All Detroit can do is compromise — design the braking system to put around 60 per cent of the total braking effort on the front wheels, for a normal stop, and 40 per cent on the rears. This gives the best all-around performance, and gives most even wear of the linings. But, of course, you also have a tendency to lock up the front brakes first on ice — and the rear brakes tend to lock first in a panic stop on dry pavement.

The only way you could get around this one would be a complex valve that would vary front and rear brake line pressure in accordance with some function like car deceleration rate or passenger load or relative speed of front and rear wheels (to detect skidding). The French Citroen has a special valve to compensate for passenger load. Detroit may come to something like this.

And there are other problems. Balancing the braking force between wheels on opposite *sides* of the car (distinct from the fore-and-aft braking distribution problem) requires careful control of lining material specifications, accurate machining of drums, rigid shoes, proper design of wheel hydraulic cylinders, etc. The design of vacuum power boosters has reached a high level in the U.S. auto industry. These can take most of the physical effort out of braking — and our latest designs (of the last four or five years) are much more responsive and have a more natural "feel" than early designs. But even the best power booster can't compensate for basic deficiences in other areas of the brake system — like loss of lining friction at high temperatures, excessive drum distortion, poor braking balance, etc. The system is no stronger than its weakest link. /MT

PONTIAC

The Accent is on a Sporty New Flair in the '62 Version of the

TEMPEST

WHEN PONTIAC'S RADICAL COMPACT, the Tempest, was introduced in the fall of 1960 it was judged by many experts, including MOTOR TREND, to be the most significant engineering development of the year. With its front-mounted engine and rear transaxle coupled by a curved driveshaft, the car introduced many innovations never seen on a modern American-made car. Along with this, the car became one of the most popular of the many compacts introduced that year. It is not strange then that Pontiac has decided to stick with the fundamental engineering precepts that it pioneered and in the present model year to introduce only refinements of present components.

Styling differences are slight and the biggest news this year is the announcement of a new body style — a convertible. The engine has several changes which fall into the classification of minor developments but nonetheless will not only make considerable difference in the smoothness and durability, but also change some performance ratings. The driveshaft and independent rear suspension have slight changes, mostly re-engineering, which should make a difference in both ride and handling.

When originally introduced, the Tempest offered only two body styles: a four-door sedan and a four-door station wagon. Later in the model year the line was expanded to include a two-door coupe and a two-door sports coupe with a custom interior and a different rear window. This year the three basic body styles

Introduced during the latter part of the model year, the Tempest sports coupe had different roof line and bucket seats. This year it is available with even sportier interior and a floor-mounted four-speed shift.

Newest Tempest is a convertible body style. Besides being offered in the standard version, it is available in the Le Mans option, which includes bucket seats.

are back, and a new convertible has been added, making four distinctly different body styles. But for practical purposes this is going to work out to about six different versions, two of which are mainly modifications of the interior layout.

Both the two-door coupe and the convertible will be offered, with a special Le Mans option. Literally speaking, the Le Mans will be another body style. This is the Tempest's new name for its most deluxe sports coupe. The option consists of semi-bucket front seats, a carpet-padded scuff panel inserted along the lower edge of the doors, a special instrument panel molding bearing the Le Mans nameplate and other interior appointments. The Le Mans nameplate will also appear on the roof rear quarter panel of the coupe and the front fender of the convertible and the rear panel of both cars.

Incidentally, the new convertible will have as standard equipment a manually-operated top — something that hasn't been seen on domestic cars for many years. Pontiac's mechanical arrangement is counterbalanced and works so easily that even a person who has difficulty lifting anything can operate it. It is interesting mostly for the fact that the Tempest compact convertible will undoubtedly be much lower in original cost — and without a separate hydraulic or electrical system to eventually replace or repair, less costly to maintain.

Overall styling changes are few. The radiator grille has been reworked to give the Tempest front end a different look, but it still retains much of the theme and flavor of the 1961 body styling in the same area. The only other significant changes are a new emblem on the rear deck lid and a new Pontiac nameplate located just above the rear bumper.

Some of the more important engineering changes have been made in the Tempest's standard engine, the slant Four. This engine was adapted from the regular Pontiac V-8, in the conventional car, by slicing off the left-hand bank. It has a displacement of 195 cubic inches, 4.06-inch bore, 3.75-inch stroke and is positioned at a 45-degree angle. Since the powerplant is so closely related to its conventional big brother, it is natural that some of the developments on the conventional Pontiac are also included on the standard Tempest Four.

Some of the Tempest's most important engineering changes, from an owner's standpoint, have been made in the Four. A new intake manifold for the standard engine has a larger exhaust-heated area and special flow diverters. Since the new manifold increases the heating efficiency of the exhaust gas, the time necessary to warm up the engine is thereby reduced. Actually, operating economy will be improved somewhat, especially in cold climates, since the choke-on time will be lessened.

As a result of the new manifolds, the single-barrel carburetors on four-cylinder engines have been recalibrated in order to improve the level-road fuel economy. The air cleaner inlet tube has been greatly enlarged, thus improving the engine's ability to breathe. Although these engineering developments on the 1962 Tempest are not major changes, they should add up to slightly better economy and performance for the Four with a single-barrel carburetor.

In the optional engines, the four-barrel, four-cylinder engine also has a new intake manifold. This manifold has streamlined parallel runners that have improved engine breathing enough so that the horsepower rating is significantly increased. The new

The new convertible Tempest, shown here in the Le Mans body style. In the standard version, convertible will be equipped with a manually-operated soft top. Besides the semi-bucket seats, the Le Mans option includes carpet-padded scuff panel installed on lower edge of the doors, special instrument panel molding, other details.

EVEN NEW BODY STYLE SHOWS HOW LITTLE EXTERIOR STYLING HAS CHANGED. POWER TRAIN REFINEMENTS SHOULD CHANGE PERFORMANCE.

ratings are 166 hp at 4800 rpm and 215 lbs.-ft. of torque at 2800 rpm, as opposed to last year's 155-hp figure.

The regular-fuel engine with 8.6 compression ratio and a single-barrel carburetor has been revised this year for the automatic transmission. Along with the manifold and carburetor changes the Four, when coupled to the automatic, will have a new camshaft and special valve lifters. This change boosts the performance ratings to 115 hp at 4400 rpm and 195 lbs.-ft. of torque at 2200 rpm, as opposed to the standard Four's ratings of 110 hp at 3800 rpm and 190 lbs.-ft. of torque at 2,000 rpm.

This year the optional 215-cubic-inch aluminum V-8 will be offered only in its performance version. This boosts the compression ratio from 8.8 to 10.25-to-1; the horsepower from 155 to 185 at 4800 rpm; and the torque figure from 220 to 230 lbs.-ft. at 2800 rpm.

Pontiac has long been known for its unusually wide selection of options that would alter performance and economy results for individual buyers, according to their particular needs. Although not as large a selection as on the conventional-sized Pontiac, the axle ratios for the Tempest are varied and the choice is excellent. Gearsets of 3.08, 3.31, 3.55, 3.73 and 3.90 are all available as regular production options.

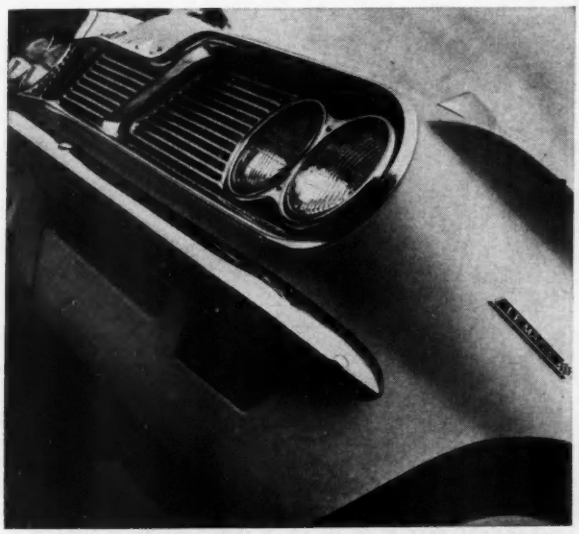
Another option that will be of interest to many persons is the new four-speed manual transmission. This unit is synchronized in all forward speeds. Gear ratios are: first, 3.65; second, 2.35; third, 1.44; fourth, 1.00; and reverse, 3.66.

Perhaps the most significant engineering changes in the new Tempest have been the refinements in the suspension. Actually there are no drastic changes. The front has an A-frame-type upper control arm and a cantilever-type lower arm with a compression strut. Coil springs are seated on the lower arm with shocks located within the coils. Rubber pads are used on top of the coils to eliminate road noise.

The wing-axle rear suspension has a cross-member attached to the integral body in four positions, with the transaxle support attached to it on rubber mountings. Differential and final drive gear case are mounted to the sprung mass of the car, with the axle shafts being driven through a U-joint on either side of the differential. Both U-joints have a splined yoke which extends into the side gears of the case.

This year Pontiac engineers have made the Tempest's ride softer by revising the construction of the front suspension upper control arm insulator bushing for a lower torsional rate. The lower control arm strut bushings have also been softened. Along with these changes, the front and rear shock absorber valving has been changed to make the Tempest ride smoother.

continued



Biggest change in Tempest appearance is in the front, where the grille has been considerably reworked. Other additions include new nameplates on front, rear.

Four-door Tempest Safari station wagon is relatively unchanged this year. Passenger compartment and cargo compartment layouts are identical to those in 1961 version. Only differences are styling and engineering refinements which the station wagon version shares with rest of the 1962 Tempest line.

Quite similar from outside, Tempest has many modifications which can't be seen. Front suspension, rear suspension, rear shock absorber, driveshaft, upper ball joints, brake shoes and engine mounts have all been refined. Other changes in the powerplant and transmission will alter Tempest's performance and economy.

Since a car with independent rear suspension naturally handles differently from a conventional domestic car, it was only natural that the Tempest would have its suspension slanted toward making the handling "feel" as much like a conventional car as possible. This will probably be even more true this year, since Pontiac engineers have modified the rear suspension geometry by tilting the rear axle control arm pivot axis three degrees to improve the car's handling.

Another engineering innovation which is unique with the Tempest is its torque tube with the curved driveshaft. Popularly this is called a flexible driveshaft, although it isn't precisely true. This year new rubber-mounted propeller shaft damper bearings have eliminated the need for retainers and clamp bolts.

This year's Tempest is lubricated at the factory with a special grease that has made it possible for Pontiac to extend the lubrication recommendation to an interval of 4,000 miles under nor-

Tempest Safari station wagon has a full-width, full-height rear door which swings upward. Counterbalanced tailgate leaves an extra-large opening through which many oversized items can be loaded.

Tempest standard Four has new manifold, revised carburetion which made several changes in performance ratings. Besides four optional slant Fours, aluminum V-8 will be offered with four-barrel carburetor.

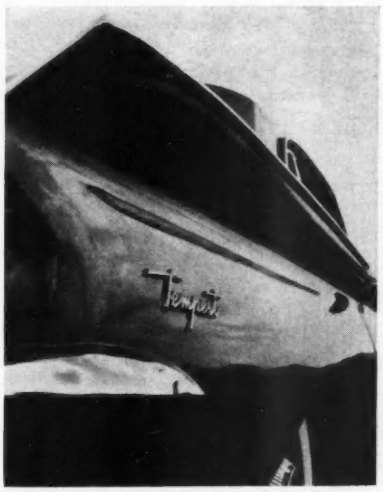
mal circumstances. The crankcase oil change interval has also been extended to a straight 4,000 miles. Last year the recommendation was "after the first 1,000 miles and every 4,000 miles thereafter." The distributor is now lubricated for life, and as in previous Tempest models the rear axle, synchromesh transmission and automatic transmission are lubricated for the life of the car.

There are several developments in the Tempest electrical system this year. Among the more important are new interior lamps on various models, a more accessible main wire harness and a new burn-out-proof windshield wiper motor.

Pontiac is also introducing a new heater this year. This unit combines outside air with heated air through a control valve for more constant heating and a better distribution of heat to the rear seat area.

Each Tempest body style has four floor reinforcements welded to the structure so that seat belts for one, two or three seat passengers can be installed from above without any drilling or tapping operations.

The Tempest has many modifications this year which fall into the minor refinement class, which aren't too important taken individually but will make considerable difference in how the car operates when considered as a group. One of these is the new upper ball joints in the suspension, which were adopted for increased durability. Brake shoes have been strengthened by increasing the flange length. Forward movement of the engine has been restricted by using a new mount design. And operation in extreme hot weather has been improved by modifying the fuel line routing as insurance against vapor locks. /MT



New Tempest nameplate is mounted on the rear quarter panel. Pontiac compact is sticking to engineering changes, introducing new body styles.

New SINGER Vogue

A **NEW MODEL** has just been added to the Singer range. It carries the name of Vogue. It's probable that the same basic structure and body panels will be used eventually for new Hillman and Sunbeam Rapier models.

Singer's Vogue has the popular features of modern style: four headlights, four doors, a wrap-around windshield of the less extreme kind which should not obstruct the entrance too much, and a big rear window which sweeps around to the sides of the car. Interior finish is on the traditional quality lines which Rootes has adopted for Singer models, without any novel features. The dashboard is in burr walnut, with a padded top roll and a lockable glove box. There is a full-width parcel shelf below it.

The seats, which have foam rubber overlays on top of spring cases, give very comfortable space for four, and can take five or six in a pinch. A bench front seat with folding center armrest is standard, but two separate seats are available as an option. Door locks have hidden "child-proof" catches which prevent the young bailing out at awkward moments.

In its mechanical design, the Vogue is thoroughly orthodox. It is powered by the Rootes 1.6-liter four-cylinder engine, with a single Solex carburetor, to give 62 hp as installed in the car, or 66.25 bhp SAE. It has a four-speed gearbox with remote control floor lever, coil spring front suspension and semi-elliptic springs at the rear, all with Girling or Woodhead-Monroe telescopic dampers.

The brakes are Lockheed drums on all four wheels, nine inches in diameter and 1¾ inches wide, giving a total friction lining area of 121 square inches. The wheelbase is five inches longer than that of the Gazelle, which should help in giving a level, steady ride, and the front track is 2½ inches wider. A useful contribution to easier maintenance has been made by reducing the chassis greasing points to four. A large, unobstructed space has been obtained in the luggage trunk by carrying the spare wheel in a drop-down cradle underneath. The de Normanville overdrive, or the Easidrive three-speed automatic transmission are optional extras. There is a wide range of single and dual color schemes.

The Vogue is a solidly built, massive-looking car and weighs about 100 pounds more than the Gazelle. It has a further interest, because the multi-million-pound investments necessary to produce new bodies these days oblige manufacturers to use them as widely as possible.

Meanwhile, the basic factory price of the Singer Gazelle has been cut by $56, and it has been given a larger engine — basically the same 1.6-liter unit as used in the new Vogue, but with a lower power output (56.5 hp). There are three body styles: sedan, convertible and estate car.

VALIANT FOR '62

Minor modifications for the third time around

IT STILL SEEMS as if the Valiant is too new a name among makes of cars to be entering its third year of production as a 1962 model. Yet the Valiant first appeared in the fall months of 1959, which is a long time ago by the compact calendar.

The Valiant is in the class of cars where major changes in design are an exception, and probably another year or two will pass before extensive alterations take place. In the case of the 1962 Valiant, there have been some refinements in the car, but essentially there are few differences from the preceding models.

Biggest news in the Valiant line is the addition of a new hardtop called the Valiant Signet 200. This is a dressed-up hardtop with bucket seats and various trim devices to distinguish it from the rest of the Valiants.

The luxury touches applied to the Signet 200 include, in addition to the plastic-covered bucket seats, special interior trim, carpeting, a special trunk lid emblem and its own grille and side trim. In all Valiants, the simulated spare tire mount on the deck lid has been dropped as a styling feature for the coming year.

The standard side trim of the V-200 series has one uncommon touch. Three squares of reflective material have been inserted into the rear portion of the chrome body strip. It may have some merit as a safety feature.

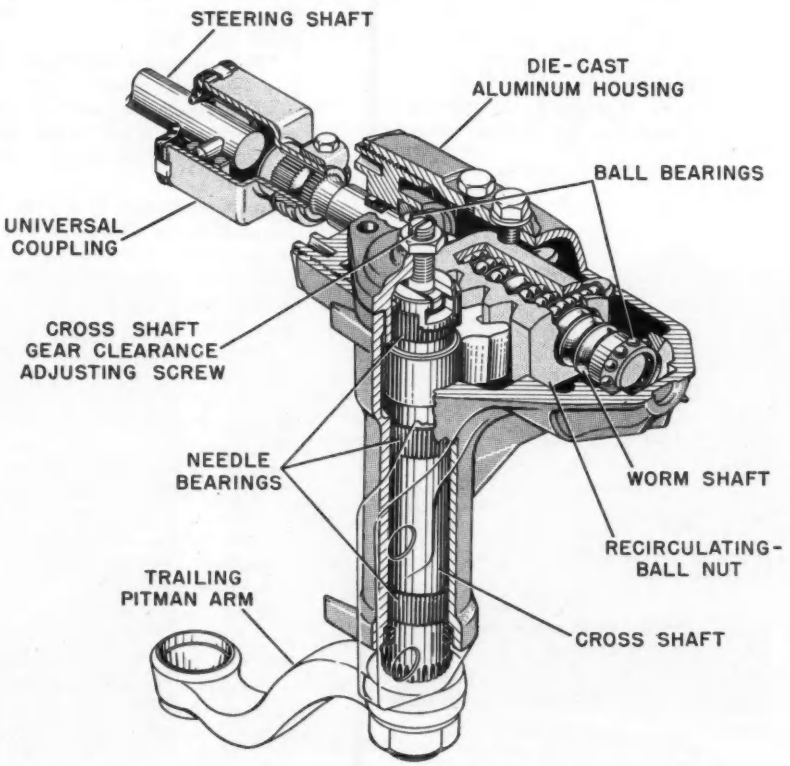
While the instrument panel is basically the same as 1961, the cluster is in a longer and narrower arrangement. The instruments are well grouped in a functional layout that is not spoiled by attempts at high styling. Only real defect is the continued use of "idiot lights," or warning lights in place of needle-type indicators for oil pressure and generator.

The Valiant was initially introduced with a 170-cubic-inch slant Six engine, and this engine has been continued as the standard. Midway in the 1961 model year, however, a new 225-cubic-inch engine with an aluminum block was brought out as an option. This option is retained for 1962 and it makes the Valiant an exceptional performer for its class. While this optional engine has the same displacement as the 225-cubic-incher used in the Plymouth for six-cylinder power, it is interesting to note that the Plymouth engine is of cast iron and not of aluminum.

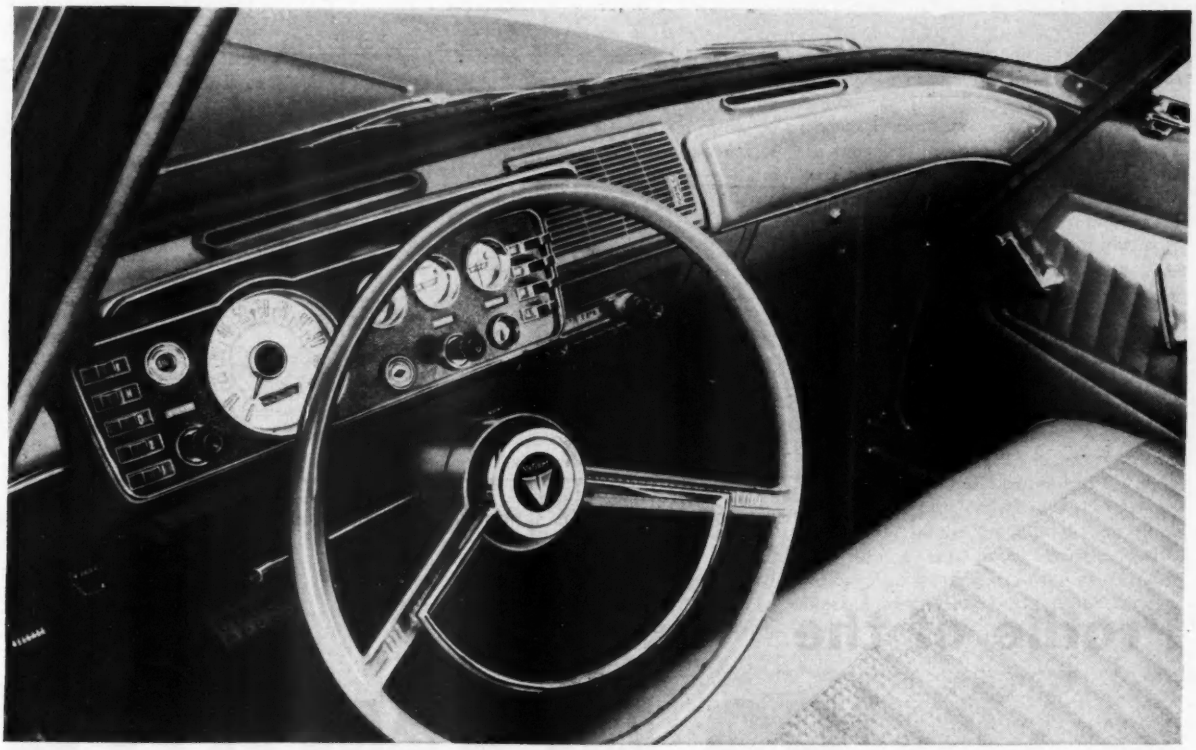
There has been a change in the rear axle ratio used with the Valiant's 225-cubic-inch aluminum engine. Last year the ratio was 3.23, but the multiplication has been reduced for 1962 to 2.93. The effect should be better fuel economy and higher top speed but less accelerating ability in traffic.

No change has been made in the manual or automatic transmissions, other than the fact that the manual box is now manipulated by a lever on the steering column, which actuates a concentric shift mechanism. The floor-mounted shift has been dropped, but the new shift is claimed to have the same positive action of the floor unit.

Valiant also goes along with the trend toward longer intervals between chassis lubrication jobs. Ten points that previously required greasing every 2,000 miles are lubricated and sealed on the assembly line for 1962. The ball joints in the suspension system also have seals, but there are plugs in them which have to be re-



New manual steering gear for 1962 Valiant, being built by Chrysler itself instead of an outside supplier, has a higher numerical ratio which reduces turning effort. Unit has aluminum housing and weighs seven pounds less.



Some changes have been made in the Valiant's dash layout, particularly in the instrument cluster, which now has a clean, functional appearance with round gauges and dials. Instrument cluster has smaller hood to reduce reflections.

moved at 32,000-mile intervals for lubricating.

The rest of the refinements in the new Valiants include the use of a printed electrical circuit for the instrument cluster, a system which is cheaper and also less intricate to repair should the need arise — which is seldom. There is a new starter motor; bonded brake linings replace the riveted type; and an increase in the capacity of the gasoline tank to 14 gallons.

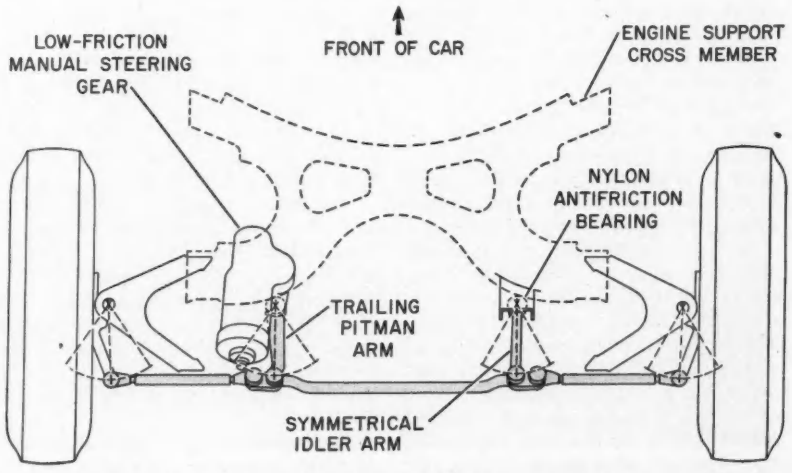
The exhaust system is now aluminized to provide greater resistance to corrosion. The muffler has aluminized steel headers and shell, the most critical parts from the standpoint of deterioration. Plymouth claims the average life of the exhaust system will be doubled.

In the station wagons, even fewer changes from 1961 will be noted. There are two series of wagons, each carrying the same designation (V-100 and V-200) as the sedans in the line. Restyling has been limited to the chrome trim and taillights and a new emblem on the tailgate.

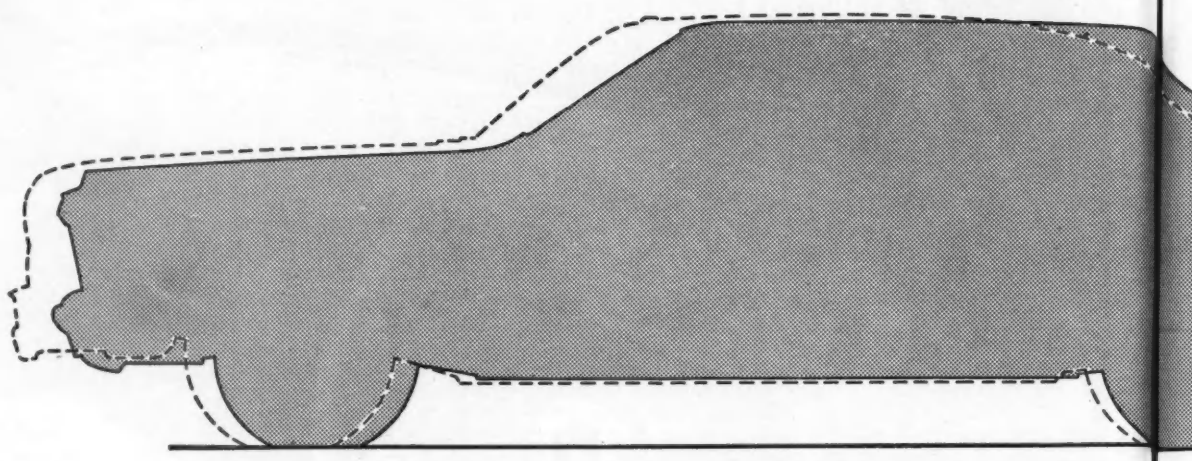
The basic dimensions of the Valiant are, except for very fractional differences, unchanged for the new year. Overall length has been increased, for instance, by half an inch to 184.2 inches. Height is up two-tenths of an inch, to 53.4 inches. Wheelbase remains at 106.5 inches, while the tread in front has been narrowed by one-tenth of an inch to 55.9 inches.

The interior dimensions of the Valiant have not, of course, been changed.

So the 1962 Valiant in all important respects, is very much the same car it was when it began its career. The only exceptions to this that drivers will note as important are the new manual shift arrangement and, if the engine option is used, the higher performance of the aluminum engine. The car remains potentially one of the fastest cars in its class and, along with the Dodge Lancer, the outstanding car for handling. /MT



Nylon bushings have replaced the rubber type in the new Valiant suspension and steering system. The advantage of nylon over rubber is the greater durability of the synthetic and the reduced deterioration from oiling.



THE NEW SHAPE OF THE PLYMOUTH IN SILHOUETTE IS COMPARED HERE WITH THE OUTLINE OF THE 1961 MODE

Profile of the '62 PLYMOUTH

A new size and unique styling are combined in a very hot package

by Don Werner

THE 1962 PLYMOUTH is a different car, not only from what it was last year, but also the way in which it differs from its traditional rivals, Ford and Chevrolet.

In recent model years, the general development of Plymouth has closely paralleled that of both Ford and Chevrolet. Now these three makes, although still in the same category, are not as easily compared as in the past. And of the trio, it is Plymouth that has made the greatest changes in its overall standard design.

It was only last year that Plymouth underwent radical restyling. For 1962, this styling has been completely replaced by a new body of much smaller dimensions. The 202-inch overall length, 7½ inches shorter than 1960, in effect almost makes the standard Plymouth a large compact car, if that term has much meaning any longer. This is the only size, incidentally, that Plymouth offers for the coming year — there are no stretched-out deluxe versions, which sometimes are used to ease a drastic change like this. Plymouth has committed itself fully to the new size.

In fact, after all the 1962 models have been announced to the public, car buyers will find that there is no other car, other than the companion Dodge of the Chrysler Corporation line, that closely matches Plymouth in its new approach. It is this trend which will change the basic nature of the standard-size low-priced class from what it has been in recent years.

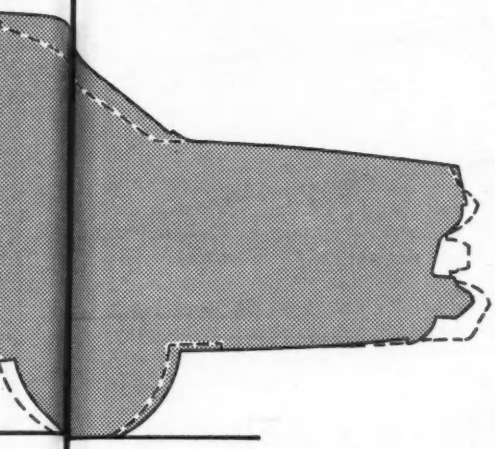
The new Plymouth, however, differs from Plymouths of earlier model years in many more ways. There are relatively few major components of the car which have not been extensively altered or replaced in 1961 or 1962. So for the new model year, only the engines are strictly carryovers from more than two years ago. And of these engines, one was new in 1960.

The engine lineup, for 1962, is virtually identical to what was available in Plymouths of last year. The only important change has been the dropping from the line of the 383-cubic-inch V-8 with its ram induction tubes. This leaves the engine selection for 1962, at least initially, at three basic engines: the 225-cubic-inch Six; the 318-cubic-inch V-8, which comes with either a two-throat or a four-throat carburetor; and the 361-cubic-inch V-8. It is very likely, however, as the model year progresses, optional engines will be added.

In the V-8 engines, the 318-cubic-inch engine is standard for 1962. A power kit, which consists basically of a four-barrel carburetor and dual exhausts, is the option. The other option, for the present at least, is the 361-cubic-inch engine, with a special camshaft, a four-barrel carburetor and dual exhausts. Oil capacity in the V-8's has been reduced from five to four quarts.

Plymouth has changed its throttle linkage for 1962. The solid shafts have been replaced by a flexible cable, the benefits being more precise carburetor control and less vibration and noise transmitted to the passenger compartment.

Although the engines in Plymouths for



Plymouths with automatic transmission have never had a parking position for locking the output shaft. This is a handy feature and the new unit is now so equipped. It is a very practical device and with it the transmission is more desirable than ever before.

In a change from previous Plymouth systems, the parking brake has been moved from a drive line lock device to the rear brakes themselves. The application is handled mechanically through separate cables connecting the parking brake foot pedal with the shoes.

This really is a superior system and enables the parking brake to function better as an occasional emergency brake, with less chance of damage to the drive line. A knob on the dash releases the brake and, as a safety feature, a movement of the knob of at least one inch is necessary in order to effect the release. The regular brakes themselves have also been revised for the 1962 Plymouths. They are now the self-adjusting type, which eliminates periodic adjustments.

Interior design of the 1962 Plymouth shows considerable evidence of new trends. For instance, for a number of years in the past, the overall glass area of the cars has steadily been increasing. This was done on the grounds of improved appearance and visibility. On the other hand, more glass made passengers uncomfortable under the hot sun and the cost of replacement of large windshield and rear window sections rose to ridiculous proportions. Windows in the new Plymouth now are smaller, with fewer curves and the backlite, as the rear window is often referred to, is now closer to the vertical which provides more shading for rear seat riders.

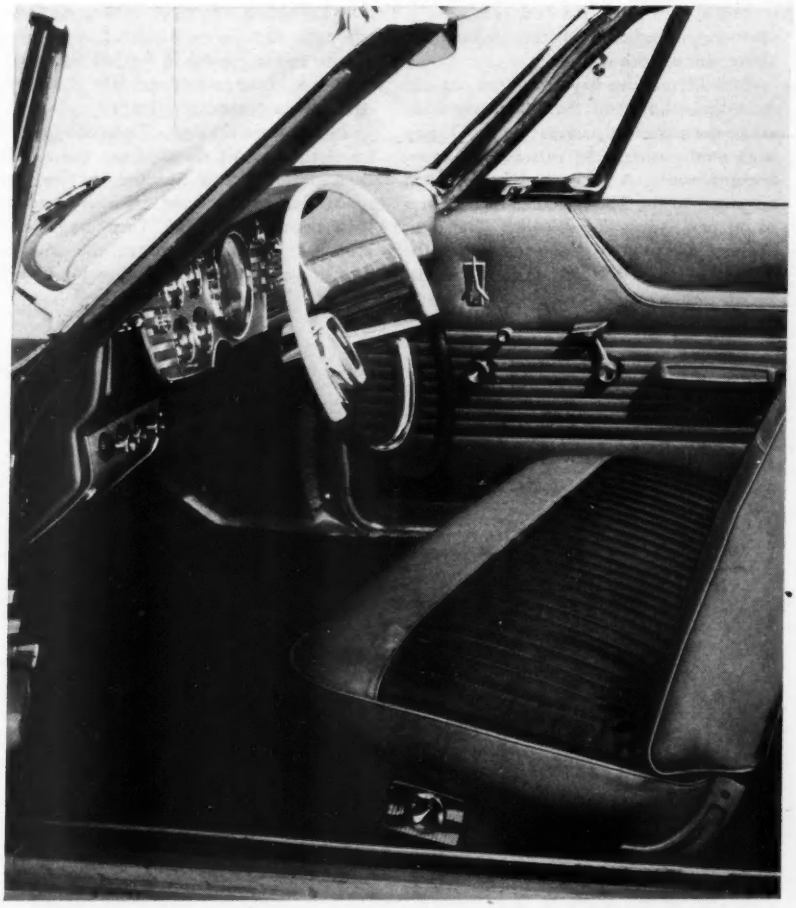
The positioning of the rear view mirror has always been a problem in hardtop body styles. Mounting on the header was unsatisfactory in the previous designs since the sloping rear roof interfered with vision. And locating it on top of the dash blocked driver vision over the right fender. The new roof line, which now is higher

1962 are the same as last year, there should be significant improvements in both accelerating ability and fuel economy. If nothing else, these figures should improve as the result of reduced weight. The new and smaller Plymouth body alone weighs 200 pounds under the 1961 version. Add to this, the weight saving in the new lightweight automatic transmission, and other minor components, and the total weight reduction amounts to nearly 400 pounds.

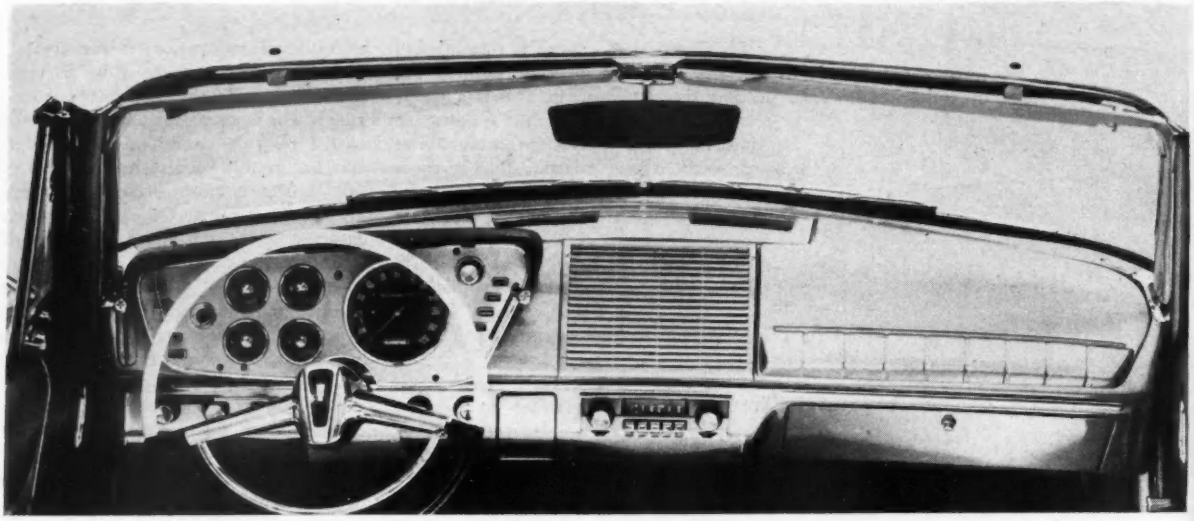
A major change in the power train for Plymouth is the introduction of a new automatic transmission for the cars equipped with V-8 engines. It replaces the previous Torqueflite and Powerflite automatic gearboxes.

While some of the features of the new automatic are similar to those of the earlier Torqueflite, there are a number of important innovations. The unit has three forward speeds and employs the same ratios: 2.45 in low, 1.45 in second gear and 1.00 in direct drive, with a 2.20 ratio for reverse. The gear selection method is also unchanged, being handled by push-buttons. The transmission case for the automatic is entirely of aluminum and through redesign the unit is much smaller and more compact. The weight reduction is about 60 pounds. And there is a lowered bump in the front passenger compartment floor.

The previous Torqueflite was an outstanding automatic, possibly the best offered by any Detroit auto maker for both performance and efficiency or fuel economy. The new transmission presumably retains these favorable features. But one further and needed refinement has been added.



The 1962 Plymouth has major improvements for entry and interior, as shown in this photo. Front pillars have wide slope due to flatter windshield glass. Seats are higher from the floor and legroom is increased.

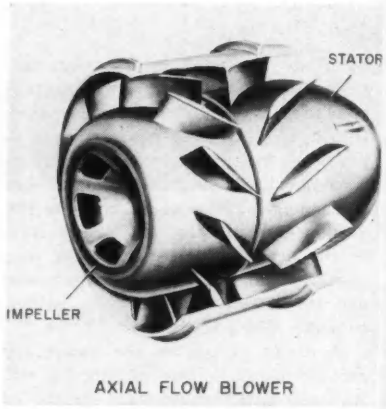


New Plymouth dash has same general layout as in previous years, but the instrument cluster itself has been greatly improved. Gauges and dials are now functionally grouped into pleasing arrangement with minimum of gimmicks.

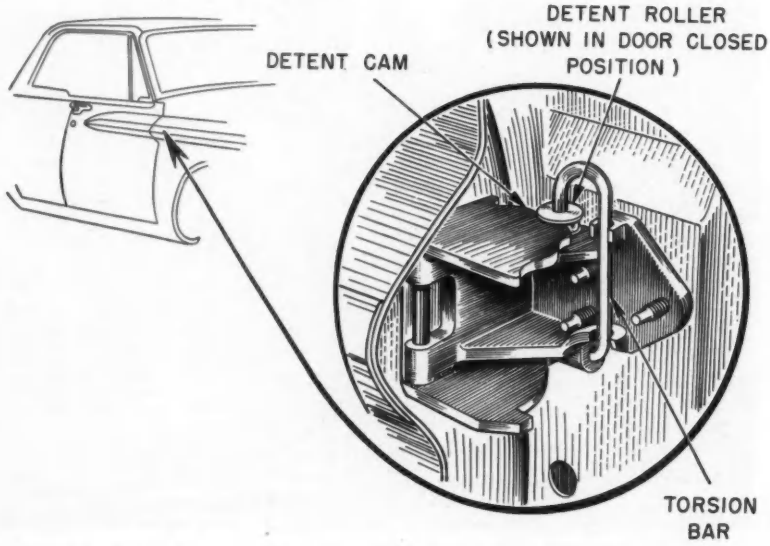
at the rear, has enabled the designers of the 1962 Plymouth to mount the mirror in probably what is the best compromise position — overhead on the header just above the windshield.

Past Plymouths have had one of the most limited systems for circulating fresh air to the passenger compartment. During high temperatures, the cars became quite uncomfortable. A new remedy has been advanced in the 1962 models in the form of a new fresh air blower. The unit operates continuously and circulates the air rapidly and effectively. Apart from the fact that the blower functions at all times, this system has particular advantages. It does keep up a stream of cooling air even while the car is at a standstill or moving in slow traffic. Plymouth says the air moves at a rate, even when the car is halted, equal to movement at 30 mph.

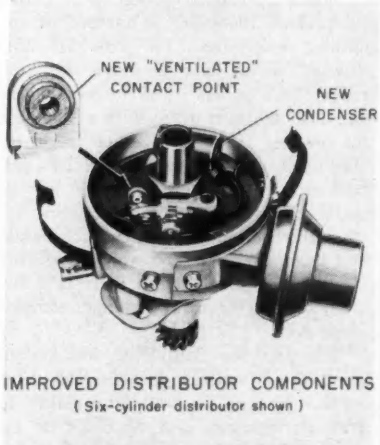
Although the new Plymouth is of smaller exterior dimensions, there has been little or no sacrifice of interior space. Indeed, at some critical points it has been increased. This has been achieved by thinner doors, the squarer roof line and the lower transmission hump.



Axial flow blower has been developed for passenger compartment ventilation that promises better air cooling.



Torsion bar door checks are a new feature of the 1962 Plymouth. They provide a springing action that results in less force to move the doors either open or shut, yet the closing action is smoother and more positive.



New distributor has points with ventilation hole to reduce tendency to pit and corrode, thus gives longer life.

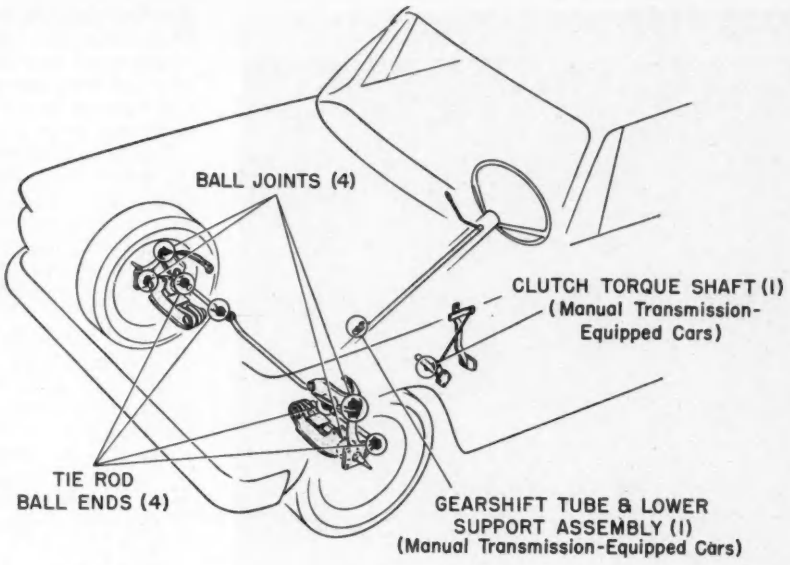
Lubrication intervals for the 1962 Plymouth chassis are now 32,000 miles. Even at that stage, only a few points will require greasing.

The biggest gains have been recorded in the hardtop body styles, while the differences between the 1961 and 1962 sedans are almost negligible. The hardtops, however, have gained four inches of legroom in the rear and over two inches in headroom. In the front, legroom is one inch more due to moving the toeboard forward.

The instrument cluster unquestionably is the best that Plymouth has ever offered. It now looks like a cluster of instruments, which is a good first step. All the dials and major control items are grouped closely in front of the driver. The ribbon type of speedometer, which Plymouth tried last year, has been dropped, fortunately, and the conventional dial is again used. It is all far more functional than it has ever been before.

In its realignment of body types and series, Plymouth also has made the designations easier. For the new year, the station wagons will carry the same names as the standard sedans and coupes. There will be the Savoy and Belvedere wagons in the cheaper wagons equipped with the six-cylinder engine. Those two series, plus the Fury series, will be available with V-8 power.

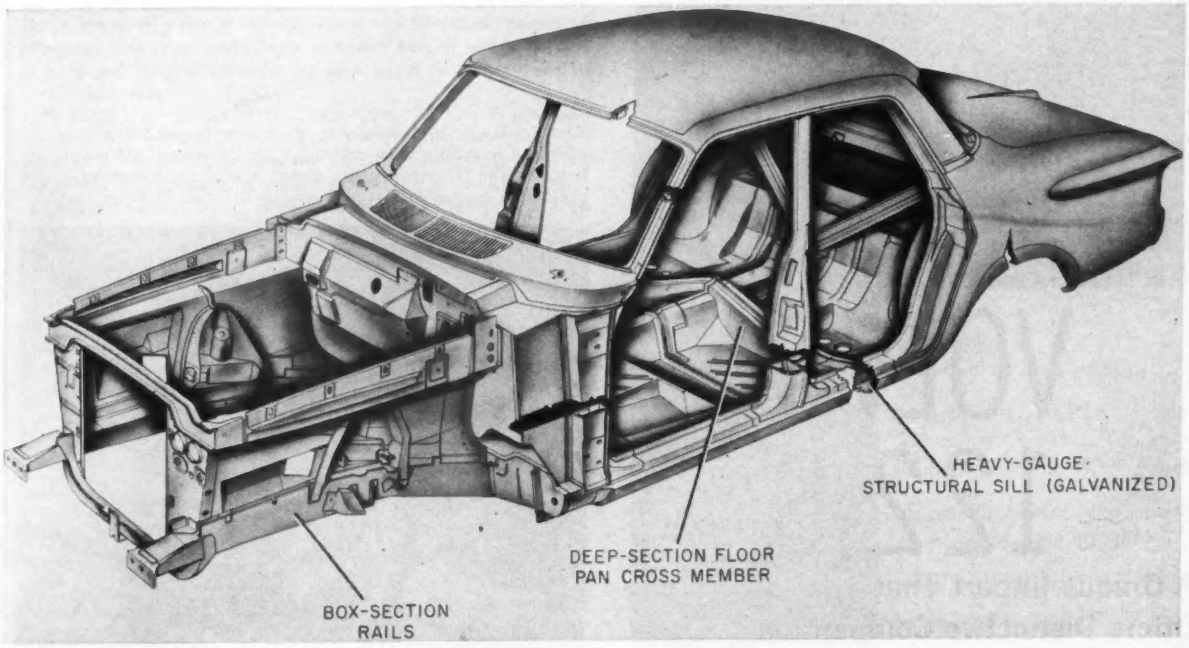
Like all other domestic car makers,



PLYMOUTH LUBRICATION FITTINGS ELIMINATED

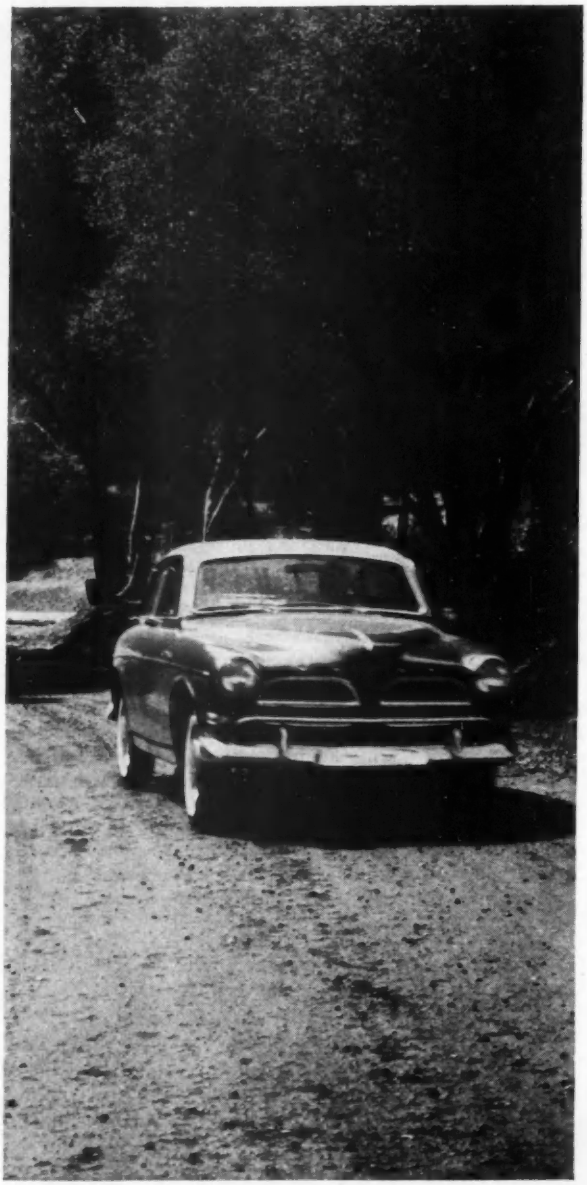
Plymouth has floor mounts for seat belt attachment built into all cars as standard equipment. The anchorages are permanently welded to the underside of the floor pan. They consist of a plate already drilled out to accept the attaching eye bolt of the belts, which are purchased as accessories from either the factory or the dealer. The prepared hole for the bolt is sealed with a rubber plug until belts are attached.

The frequent lubrication of the Plymouth chassis is no longer required. The majority of the points are now permanently lubricated. At 32,000-mile intervals, the ball joints in the suspension system have sealed lubrication which must be replenished. /MT



Although 1962 Plymouth unit body is 7½ inches shorter and five inches narrower, the interior dimensions have not been significantly reduced, and in some instances have been increased. Most of the reduction in overall length has been at the expense of front and rear overhang, since wheelbase has been shortened only two inches.

ROAD TEST



VOLVO 122-S

A Unique Import That Offers Distinctive Competition To The Domestic Compacts

ALTHOUGH IT WAS INTRODUCED to U.S car buyers only a little more than five years ago as a make of imported cars, Volvo is now in the front rank both in reputation and in popularity. There are many reasons for this, among them high quality and high performance at a reasonable price, but one factor that is relatively new is the increasing variety in the Volvo lines of cars.

The bread-and-butter cars of the Volvo line are, of course, the various versions of the 544 series — which have been previously reported on in recent issues of MOTOR TREND. There are two additional important vehicles bearing the Volvo name which should not be overlooked. One, obviously, is the new P-1800 sports car (see September MOTOR TREND), and the other is the impressive and more luxurious sedan, designated as the 122-S.

A road test of the Volvo 122-S over an extensive distance of more than 2,000 miles was just conducted by the MOTOR TREND staff. Many of its characteristics are similar to those of the PV-544 series, and to a limited extent even the P-1800 sports car. But the 122-S is a distinctive car in its own right.

Much of the Volvo reputation has been built on the high performance of its cars in comparison with competing makes in the same class. The 122-S continues this tradition, although its general performance ability is not as startling as the Volvo PV-544 in the 85-hp version.

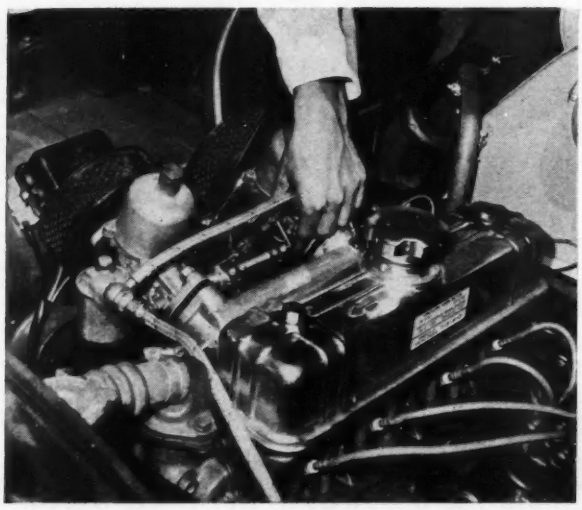
The 122-S has substantially the same engine, drive line and running gear as the companion 544's. The engine is the four-cylinder, running 8.2 compression and rated at 85 hp. There are dual SU carburetors feeding the 97 cubic inches, and power is transmitted through an all-synchromesh four-speed gearbox to the rear axle, which has a final ratio of 4.56.

The accelerating time from 0 to 60 mph for the 122-S is about 16½ seconds on an average. This makes it somewhat slower than the PV-544, which hits 60 mph in approximately 13½ seconds, but it is faster than the PV-544 Special Deluxe (the lowest-priced Volvo with same engine but lower compression and single carburetor to yield 60 hp), which posts a time of just over 18 seconds.

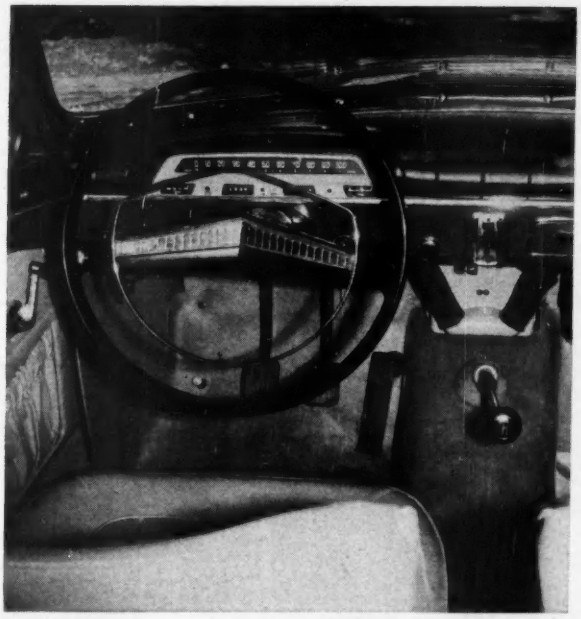
The slower acceleration of the 122-S is, of course, directly the result of the heavier body, nearly 300 pounds more than the hot PV-544. It is a coincidence, but nonetheless interesting, that the 122-S also costs about $300 more than the PV-544, or almost exactly $1 per pound for the luxury and better finish.

The Volvo engine, used in all Volvos with the exception of the P-1800, is really a small economy engine, but it is so

The Volvo engine is a rare type, in that it combines true gasoline economy with excellent performance. Although it uses dual SU carburetors which add to accelerating ability, in average driving it will yield 21 to 25 mpg.



The cockpit of the 122-S has major controls, including the steering wheel and floor gear lever, in excellent positions. Major flaw of the instruments is a ribbon-type speedometer, which is harder to read than a dial.



ruggedly designed and constructed that it is capable of functioning under the greater strain of performance as well. As might be expected from a small-displacement, high-revving hot engine, the gears must be given close attention if maximum performance is to be realized. Yet the four-speed transmission, which feels rough at idle, is extremely quiet and works beautifully. It undoubtedly adds to the enjoyment of many Volvo drivers.

The 122-S fuel economy is very good. The average gas mileage rarely falls below 20 even under great stress, and sometimes climbs as high as 27 or 28. The average range determined by this road test was 21 to 25 mpg. The 85-hp PV-544 will average 22 to 27 mpg, while the 60-hp PV-544 has a range of 23 to 28 mpg. An interesting bit of evidence on the penalty of higher performance and increased weight.

While the quick and precise steering and the very short turning radius of the 122-S make it a car of good maneuverability, its general handling is not up to the very high standards of the PV-544. The reason for this is the heavier car body and the softer ride offered in the attempt to provide luxury. These characteristics result in a little more lean when cornering, combined with a slight tendency to oversteering.

The 122-S in action on all types of roads is notable for the absence of rattles and vibrations and a very low level of wind noise. Such quietness, however, makes the engine roar all the more noticeable, so the car has the traditional Volvo bark in its exhaust and considerable intake roar. Some of this engine noise can be muffled, if so desired, by the installation of an optional air cleaner silencer unit which recently has become available.

It has been pointed out repeatedly in the past two years that the 122-S, originally called the Amazon, has a striking resemblance to the last Willys sedan manufactured in the United States. A similar resemblance is often noted between the PV-544 and the fastback Fords of the mid-1940's. No official explanation has ever been offered for this by Volvo, but according to informed sources in car design circles, the Volvos were not copied from American styles, nor were obsolete dies involved. Instead, it was a matter of certain stylists themselves who conformed to particular theories of design.

Whatever the origin of the body lines, the Volvos generally are well laid out and the 122-S adheres to this policy. There's no need to stoop or crouch when entering or leaving, since the car height is adequate and the doors open wide and have ample clearance over curb lines. The individual semi-bucket front seats are chair high and fully adjustable, even to the rake of the seat back. The rear seat accommodates two riders, with more than enough room for comfort, plus the added luxury of a center armrest which can fold out of the way to make room for a third passenger. All four window cranks are easily reached from the driver's seat.

Volvo long preceded Detroit in the installation of anchor points for seat belts, introducing them more than five years ago as standard equipment in all cars. Now all Volvos sold in Europe have the belts as a standard item, although the cars imported into the U.S. have only the attachment points. The optional belts include a combination chest and lap type, which is much more effective in case of impact.

The Volvo 122-S occupies a unique position among the imported cars. It is almost without an exact counterpart in that class, and it is best compared with the domestic compacts. It matches Detroit's smaller cars very well in price, performance and durability and exceeds nearly all in gasoline mileage, quality and in luxury for a moderate price. The 122-S appeared on the U.S. scene at the very same time the new compacts were first revealed. Chances are it'll go on unchanged a lot longer than most of them. /MT

MOTOR TREND TEST DATA

TEST CAR:	Volvo 122-S
BODY TYPE:	Four-door sedan
BASE PRICE:	$2495
ENGINE TYPE:	Ohv Four
DISPLACEMENT:	97 cubic inches
COMPRESSION RATIO:	8.2-to-1
CARBURETION:	Twin SU
HORSEPOWER:	85 @ 5500 rpm
TRANSMISSION:	Four-speed, all synchro manual
REAR AXLE RATIO:	4.56
GAS MILEAGE:	21 to 25 miles per gallon
ACCELERATION:	0-30 mph in 4.9 seconds, 0-45 mph in 8.8 seconds and 0-60 mph in 16.5 sec.
SPEEDOMETER ERROR:	Indicated 30, 45 and 60 mph are actual 30, 45 and 59 mph, respectively
ODOMETER ERROR:	Indicated 100 miles is actual 98 miles
WEIGHT-POWER RATIO:	28.2 lbs. per horsepower
HORSEPOWER PER CUBIC INCH:	.88

ROAD TEST

MERCEDES BENZ 190

Even this modest version speaks of fine engineering

by John Lawlor

THE THREE-POINTED STAR is one of motoring's proudest emblems. Standing at the crest of a Mercedes-Benz hood, even one housing a modest four-cylinder engine, it reminds the driver that he is piloting an automobile with one of the world's finest engineering reputations.

Yet it is more than just a symbol of the careful thought that goes into the car — it is an example as well. On the 190 sedan tested by MOTOR TREND, the ornament looked very fragile but was spring-mounted so that it would not be broken off accidentally!

The 190 is Mercedes-Benz' most powerful four-cylinder sedan, topping a line that includes the 180, 180-D and 190-D. In power, size and weight, it resembles a U.S. compact. The engine develops 90 hp, the car measures 177.2 inches overall and ships at a weight of 2450 pounds. Not too surprisingly, it accelerates much like a domestic economy job; MT recorded a 0-60 time of 15.9 seconds.

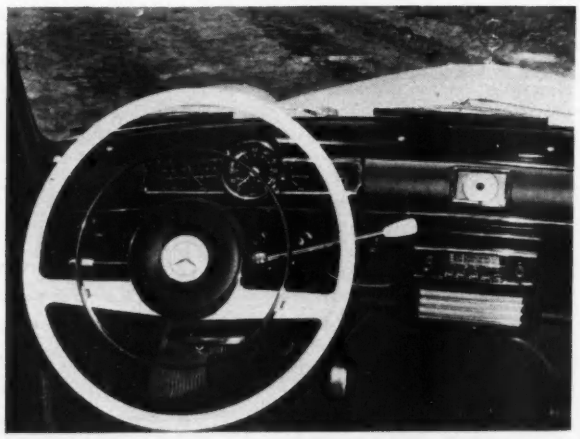
Engine displacement, however, is a mere 115.75 cubic inches. Mercedes-Benz prefers small but extremely efficient powerplants to the bigger, lazier units favored in this country.

The basic block of the 190 is shared with the 180, 190-D diesel sedan and 190-SL sports convertible. As fitted to the 190, it has an 8.5-to-1 compression ratio and a single two-barrel carburetor.

An overhead camshaft allows the unit to rely on high revving potential, rather than engine size, for a useful output. For example, the 90 horses occur at 5,000 rpm but the factory says the unit can be pushed to 6,000! Still, it is flexible and quite smooth for a Four. Maximum torque, 111.3 lbs.-ft., is produced at a moderate 3,000 rpm.

To take advantage of the rpm available, the 190 has relatively high numerical gearing. The first three ratios in the four-speed transmission are 4.05, 2.38 and 1.53, respectively, while the rear axle is 4.10. The gear lever has a fairly smooth, precise feel for one mounted on the steering column. Though first is synchronized, it seemed rather sticky in MT's 190.

The choice of ratios worked against the best possible demonstration of the 190's acceleration. The 0-30 figure of 4.4 sec-



Mercedes-Benz does not use the recessed steering wheel hub common in U.S. but does pad the hub as a safety feature. Minor controls are slightly confusing to a newcomer because they are not labeled or illuminated.

A dry air cleaner is used on the two-barrel carburetor. The large bulge at the forward end of the valve cover houses the chain drive system for the overhead camshaft.

onds includes time to shift to second, and the 0-45 of 8.4 was obtained by pushing in second beyond peak engine efficiency. Other points on the acceleration curve might show the car to be a better performer than these do.

The factory makes no extravagant claims about the 190's fuel consumption. Mercedes-Benz literature states the car should average 20.4 mpg, right in the middle of the 18-to-22-mpg range recorded by MT's test car.

One of the make's most celebrated features is its fully independent coil suspension. The system at the front is conventional, with unequal A-arms. At the rear, however, the arrangement is completely unorthodox. The axle shafts do not pivot on U-joints at either side of the differential, as in most methods of independent rear suspension. Instead, the differential is integrated with the right axle and connected to the left through one central U-joint.

The U-joint is not the pivot point, however. Both shafts have small arms which connect at a single point on an approximate level with the bottom of the differential. This lowers the roll center as far as possible without impairing ground clearance.

The overall result is unusual stability for independent rear suspension. If the 190 is thrown into a tight corner suddenly, the rear end does sway slightly. However, it is not apt to break loose and can be brought under control with little effort. If the car is accelerated through a turn gradually, it handles beautifully. Just a suggestion of oversteer becomes apparent as it approaches the limit of secure traction.

Adding its share to the 190's cornering ability is excellent steering. Reasonably quick at 3.5 turns lock-to-lock, it has a firm feel and centers precisely without fighting the driver.

Riding qualities also deserve high praise. For a relatively small, light car, the 190 smooths out rough spots extremely well. There is very little shock even on hard, irregular surfaces. On undulating pavement and at high speeds, there is a slight tendency to float, but it is not at all disturbing.

The 190's basic body shell dates back almost a decade, which means the 190 has several characteristics of older cars. As a case in point, visibility is not up to current standards, but interior roominess is far superior to that of many more recent designs. Four people have plenty of room to stretch on long trips, while five are not crowded during jaunts around town.

Bucket seats were fitted to the test car's front compartment, though a bench is available and raises the capacity to six passengers. The buckets are quite large, well contoured and firmly padded for long-distance comfort. Good interior height allows the front seat to be mounted well above the floor, providing an erect seating position and increasing room for rear passengers' feet.

The cockpit appears neat enough but is confusing to a newcomer because none of the dash controls is marked, and some of them operate differently from their counterparts in a U.S. car. Safety padding is used on the visors, upper section of the dash and center of the steering wheel. The parking brake is a pull type located in an awkward position near the steering column. Foot pedals are close enough, without being cramped, that the driver can "heel and toe" with little difficulty.

A control under the dash releases the hood. The grille lifts with the hood but tends to be in the way because the whole assembly does not raise too high.

At the other end of the car, older design again proves itself. The 18-cubic-foot trunk is very well proportioned. To take maximum advantage of it, Mercedes-Benz adds the finishing touch of optional, fitted luggage. /MT

MOTOR TREND TEST DATA

TEST CAR:	Mercedes-Benz 190
BODY TYPE:	Four-door sedan
BASE PRICE:	$3441
ENGINE TYPE:	Ohc Four
DISPLACEMENT:	115.75 cubic inches
COMPRESSION RATIO:	8.5-to-1
CARBURETION:	Single two-barrel
HORSEPOWER:	90 @ 5,000 rpm
TRANSMISSION:	Four-speed manual
REAR AXLE RATIO:	4.10
GAS MILEAGE:	18 to 22 miles per gallon
ACCELERATION:	0-30 mph in 4.4 seconds, 0-45 mph in 8.4 seconds and 0-60 mph in 15.9 seconds
SPEEDOMETER ERROR:	Indicated 30, 45 and 60 mph are actual 29, 43.5 and 58 mph, respectively
ODOMETER ERROR:	Indicated 100 miles is actual 97 miles
WEIGHT-POWER RATIO:	27.2 lbs. per horsepower
HORSEPOWER PER CUBIC INCH:	.77

Know your car

DRIVE TRAIN CONFIGURATIONS

by Robert W. Temple

CONFIGURATION: The relative disposition of parts. The figure, contour, or pattern produced by such disposition.

This is Webster's definition of the word, so let's see what it has to do with drive trains.

A few years ago I could have drawn a picture of a torque-drive layout, a Hotchkiss drive, written a description of the two and then called it quits. Recently things have become a bit more interesting. Seems some of the drive train engineers have deserted the "me too" school and started off on divergent paths. I'm all for it.

Back in the "me too" days the various brands of cars on the market had about as much individuality as a row of kitchen pots from the same die set, the only distinguishing characteristics being in the brand name and the extent of torturing to which the external sheet metal had been subjected.

If you think you have seen everything in the way of automotive styling though, just be patient. They haven't tried "Steamboat Gothic" yet — could revolutionize the entire industry.

Getting back to drive train configurations, I think we should start off with the familiar conventional types and then progress to the more recent developments.

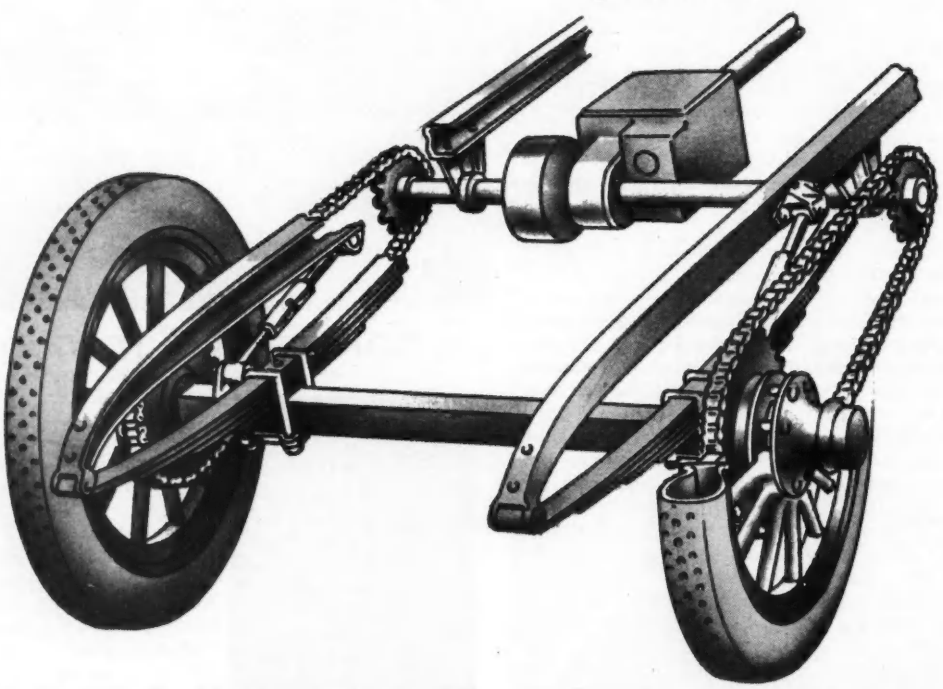


Figure 1 In their simplest form we have two basic types of axles: the "live" axle and the "dead" axle — simple terms used to describe an axle which transmits power to the wheel and an axle which serves only as a pivot about which the wheel rotates.

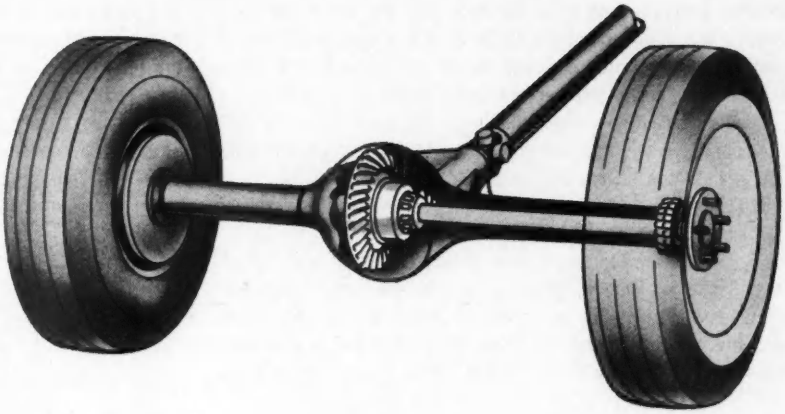
Some very early automobiles used a "dead" rear axle, with the wheels powered by chain or belt from a jack-shaft mounted on the frame. The differential was on the jack-shaft. The rear axle served as a pivot for the rear wheels and supported the rear end of the vehicle.

This may seem a roundabout method of doing things, but remember that this was back in the days of horses, buggies, atrocious roads and very elementary metallurgy. Ferrous metals available at the time were cast iron, wrought iron, and very low-grade carbon steel. Mounting the differential up on the frame solved a lot of stress, lubrication and bearing problems. The differential was up out of harm's way and had nothing to do but transmit power to the driving sprockets. Vehicle loads and side thrust were handled by the "dead" rear axle.

This system is used today on various types of heavy equipment, where power-transmitting axles are impractical, due to the loads involved.

"Live" axles are made in several types, and here again we will go back to their earliest form in order to explain their development more clearly.

Solid "live" axles, that is, those which are not independently articulated, are divided into four categories, only two of which are in general use today. These types of axles are referred to as plain, semi-floating, three-quarter floating, and full-floating axles. The individual types are distinguished by the manner in which they are assembled and what stresses they must carry.



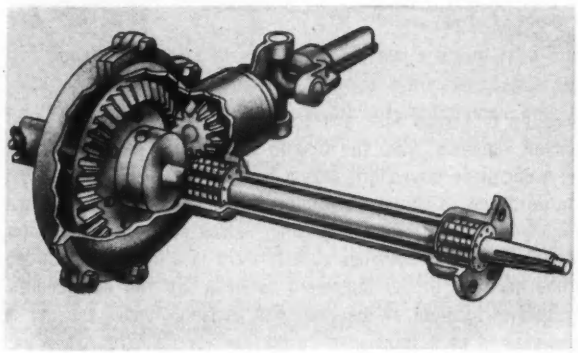


Figure 2 Plain live axles: These were non-floating axles. They were essentially a solid shaft supported at the ends by ball or roller bearings. The differential side gear was keyed to the inner end of the shaft and the rear wheel to the outer end. The bearings were usually contained in a crude housing. If you could pull the axle shafts out of this type of rear end, the differential would fall to the bottom of the housing, since it was supported directly on the axle shafts.

With this type of axle, the shafts themselves were forced to carry the entire weight of the rear end of the vehicle, all the operating stresses of the differential, and the road shock and side thrust encountered in the operation of the vehicle. It is easy to see why this type of axle is now obsolete.

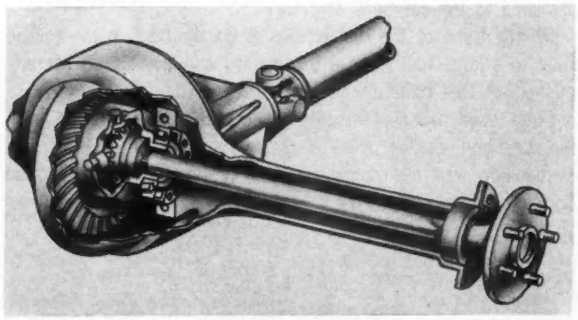


Figure 3 Semi-floating axles: The semi-floating axle is used on all of our present passenger and light commercial vehicles, with the exception of those vehicles which use independent rear suspension. Structurally, this is the next progressive step from the plain "live" axle.

The principal difference between these two types of axles is in the method of mounting the differential. To relieve the axle shafts of the operating stresses of the differential, it is supported within the rear axle housing on its own set of bearings, so that stresses are transmitted directly to the housing instead of to the axle shafts.

The outer ends of the axles attach solidly to the wheel hub and vehicle weight rides on a bearing directly on the axle, as with the plain axle. The inner end of the axle shaft, however, has the differential side gear splined to it and merely "floats" in the case, since the differential itself is now supported in bearings.

In addition to vehicle rear end weight, all road shock and side thrust is taken directly by the axle shafts.

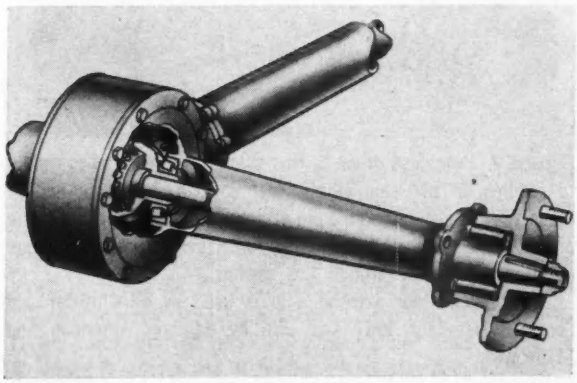


Figure 4 Three-quarter floating axles: This type of rear axle is no longer in general use, but is still familiar because it was used on Ford, Mercury, and Lincoln Zephyr until 1948.

In this type, the differential is supported in bearings in the rear axle housing as with the semi-floating type. The wheel hub rides on a roller bearing, which in turn rides on the **outside** of the rear axle housing. Thus the vehicle rear end weight and road shock are taken by the axle housing instead of by the axle.

The Ford-Mercury-Zephyr axle had the differential side gear

mounted integrally with it on the inner end. The wheel hub was keyed to the outer end of the shaft. With this type of axle, only rotational driving force and side thrust are taken by the axle. All other weight and stresses are taken by the axle housing.

A word of caution though: Although the wheel rides on the axle housing, it still depends upon the axle shaft and its integral side gear in the differential to hold it on.

Don't tow an early Ford, Mercury or Zephyr with a broken rear axle.

I know a comedian who towed an old Zephyr at high speed from Sandusky, Ohio to Detroit — one of the most dangerous stretches of highway in the country — with a broken axle. What held the wheel on? Just the brake shoes and the groove they had worn in the brake drum. He was lucky — you might not be.

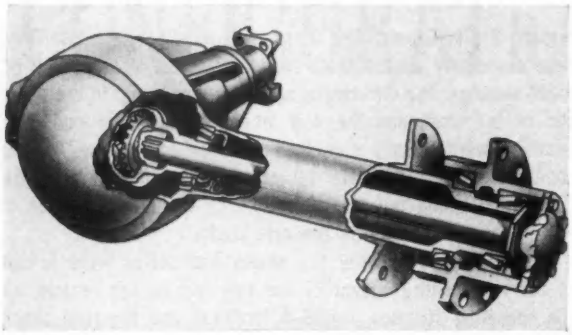


Figure 5 Full-floating axles: The full-floating-type rear axle is used in practically all commercial-type vehicles from three-quarter ton up.

As with the two previous types we have described, the differential is carried on bearings within the rear axle housing. The wheel hub is retained on two widely spaced sets of ball or roller bearings which ride on the **outside** of the rear axle housing.

In a true full-floating axle, the axle shafts rest in the splined differential side gear at the inner end and in a splined dog clutch plate at the outer end. The axle shaft does nothing but supply driving force to the wheels. The axle shafts can be removed and the wheels are still retained on the axle housing, forming a "dead" axle.

"Full-floating" axles in common use today usually have an integral flange at the outer end of the axle shaft, which is bolted directly to the wheel hub to transmit power. Being solidly attached to the wheel hub, this type of axle was originally called "seven-eighths" floating. The term was too cumbersome and is seldom used today. These axles are all lumped into the "full-floating" category because, aside from this one feature, their characteristics are identical.

In this type of rear axle, all weight, stresses and road shock are taken by the axle housing. Only driving torque is taken by the axle shafts.

Remember — the **only** cars safe to tow with a broken rear axle are those having the full-floating type. This means a few of the early big classics and antiques and, of course, most commercial vehicles from three-quarter ton up.

The power applied to the rear wheels by the axles is transmitted to the vehicle through the attaching points of the rear suspension and its locating members. We won't attempt to get into vehicular suspension systems in this chapter, but will show the relationship of the various types of rear suspension to the drive train.

American passenger cars in general use three methods of attaching a conventional rear axle to a car. These are torque tube with coil springs, Hotchkiss drive which uses leaf springs, and torque arms and links with coil springs.

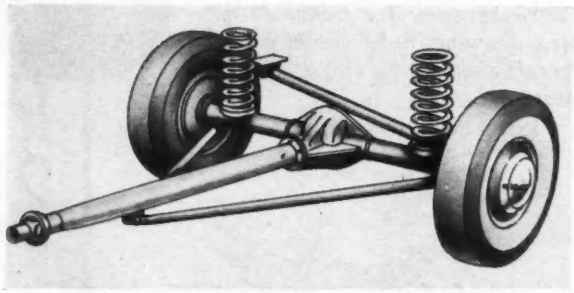


Figure 6 Torque tube and coil springs: This method is used on all Ramblers, from the Classic through the Ambassador.

A one-piece driveshaft, having a single universal joint at the forward end, is contained within a torque tube, which is bolted rigidly to the differential housing. Radius rods from the outer ends of the axle housings to a forward location on the torque tube maintain proper alignment between the two components.

Lateral location of the rear axle assembly under the car is maintained by a transverse "track bar" or Panhard rod, which has one end attached to the axle housing and the opposite end attached to the car body structure.

Driving force of the rear wheels is transmitted up the torque tube to a large ball joint at its forward end. The car is literally pushed at this point of contact.

Buick used this system until 1960. The aforementioned Ford, Mercury and Zephyr used a similar system until 1948, but suspension was by transverse leaf spring instead of by coil springs.

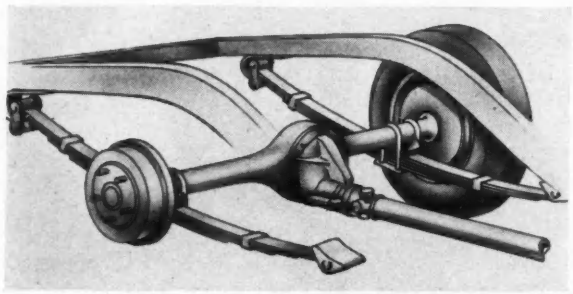


Figure 7 Hotchkiss drive: In this system, the axle bolts rigidly to saddles on two semi-elliptic leaf springs. The front end of these springs oscillates on a pin attached solidly to the car frame or underbody. All rear axle driving force, side thrust and torque reaction are taken through the springs.

This type of rear axle hook-up is used by all Chrysler and Ford products for 1961 and also by Rambler American and Studebaker.

(A)

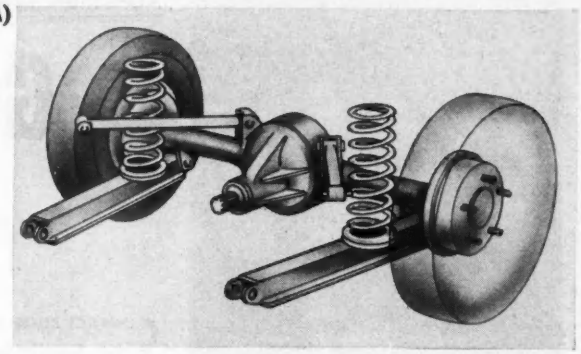
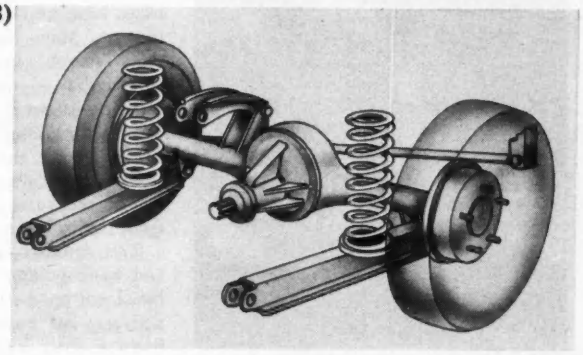


Figure 8 Torque arms and links: All General Motors cars except the new Corvair and Tempest use variations of this system of rear axle attachment.

Two husky torque arms extending forward from the rear axle attach to insulated mounts on the car frame. These arms take the driving thrust of the rear wheels and are common to the GM cars using conventional rear axles. The various divisions of GM have different views on methods of locating the axles and resisting torque and axle wind-up, however.

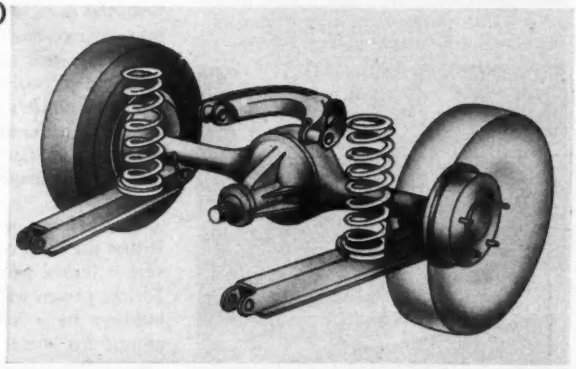
(A) Pontiac, Oldsmobile, Olds F-85 and Buick Special all use diagonal links from the top of the differential banjo housing to the frame. These links prevent axle wind-up, resist torque and locate the axle laterally.

(B)



(B) Big brother Buicks and Chevrolet use a transverse "track bar" or Panhard rod to locate the axle assembly laterally and a link from the upper right side of the differential banjo housing to the frame to prevent axle wind-up. Torque reaction is through the torque arms and the rear axle housing.

(C)



(C) Cadillac uses a large yoke with a ball and socket attachment at a top center location on the banjo. The front end of the yoke operates on two trunnion bearings on the chassis frame rails. This yoke prevents axle wind-up, resists torque reaction and positions the axle assembly laterally.

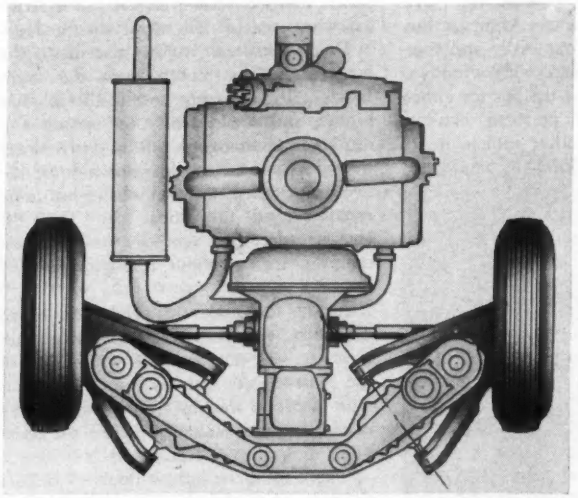


Figure 9 The automotive industry has coined the word "transaxle" to describe the rear-wheel-drive layout used by Corvair and Tempest.

With this system, the transmission and differential are combined in a unit which is attached to the body understructure through insulated mounts. Rotational force only is transmitted to the axles through universal joints at the sides of the differential. The outer end of the axle rides in a double-row roller bearing, which is contained in a trailing suspension arm in much the same manner as the bearing contains the axle at the outer end of a semi-floating axle. A line through the pivot points of the trailing arm would also pass through the universal joint, so the whole assembly of axle and suspension arm pivot or swing about this center line.

The rear axle supports the weight of the rear end, as with a semi-floating axle. With the exception of the driving force which the axle delivers to the wheel, all other forces and stresses are taken by the suspension members.

Tempest and Corvair are almost identical in their rear swing axle configurations. The Tempest transmission and differential are driven from the front, as we saw in the last chapter of the "Know Your Car" series. The Corvair, of course, drives directly from the rear side of the assembly as shown in Figure 9.

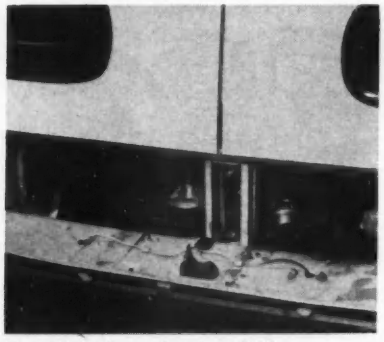
Well — gotta go out and tow home an old Ford. Nope, there aren't any broken axles in this one. /MT

FOR MEN ONLY

GREENBRIER VS.

the Chevy-Ford feud now extends

Although Chevrolet's Greenbrier has a high step, entry and exit are above average for forward-control trucks.

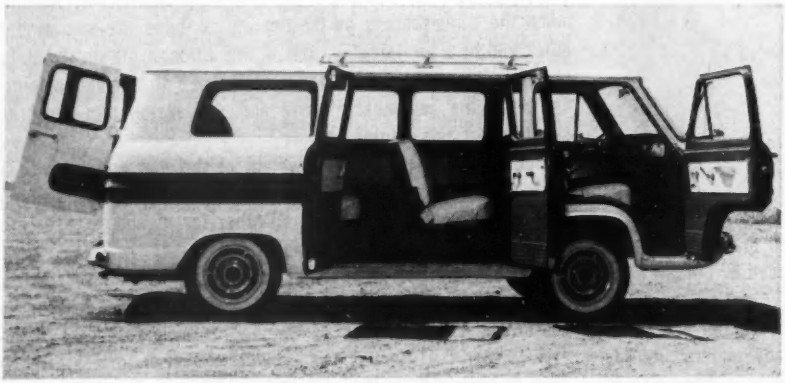


Greenbrier's engine is quickly accessible for minor adjustments through a small rear trap door.

COMPACT BUSES are fairly new to American manufacturers, although imported buses have become quite popular in this country. Many people insist on calling them station wagons. Literally this is correct, but in the American concept of a station wagon based on a sedan, it is not accurate. Although the two buses driven for this report, the Greenbrier and Econoline, owe much to the Corvair and Falcon sedans, the buses are completely different from the compact station wagon versions.

The compact bus gets its advantages and weak points from the fact that it is based not on the sedan, but on the panel delivery van body style. This gives the buses a space and cargo capacity better than the most expensive sedan-type station wagon on the market today. The Greenbrier will seat nine people in comfort, the Econoline has seats for eight and in a pinch will seat nine. Moreover, either bus will, without too much crowding, haul an entire Little League team, plus the manager and most of their equipment.

Another big plus for the compact bus is that the seats come out easily and convert it into a panel truck with windows. For the person who uses the bus for either business or a lot of personal hauling around his home, no other vehicle in its price range is comparable, or even quite equal to the compact bus.



With all its six doors open, the Greenbrier sports wagon has excellent access to the rear passenger or cargo area. Side and rear doors have a detachable hinge which allows doors to open fully, making loading against a dock easier.

CHEVROLET GREENBRIER SPORTS WAGON

The Greenbrier driven for this report was powered by the familiar Corvair flat-opposed Six which produces 80 hp. The only major option was an automatic transmission.

As might be expected, the automatic transmission cut into both the fuel economy and the acceleration. While this unit can be highly recommended for commercial use, where stop-and-go deliveries make it useful, the average user of the bus will probably be making longer trips and find that the economy and acceleration gains make the manual shift an advantage.

The test car had two seats besides the fixed front seat. They are held in place by thumb screws, and complete removal can be done without any tools. One big advantage in the passenger compartment is that the second seat can be reversed to face backwards. An option includes a bar on the side which supports a table. This is a big advantage for those who camp or picnic frequently or even for the individual who needs a desk while on the road.

Due to its rear engine placement, the far rear area is raised from the floor. Incidentally, the front area is also slightly higher, and consequently the second and third seat passengers ride slightly lower than do those in the forward cab. Of the two buses tested, the Greenbrier has more room behind the third seat. There is enough space for ample gear for most camping trips without removing any of the seats.

Inside, the finish materials and detail design are excellent. Upholstery materials, however, did not compare with some of the more ornate finishes found in sedan-type station wagons. The Greenbrier's materials were evidently picked for durability as well as attractiveness.

The Greenbrier has six doors — besides the two normal front doors, two side doors and two rear ones. The side and rear doors open normally to about right angles with the body. But for special loading problems they have two bars which can be detached and the doors opened practically flat against the sides. This means the Greenbrier can be backed up flush or driven directly alongside a dock or another door.

Major service jobs are going to be

by Bob Ames

ECONOLINE

to the field of compact buses

relatively simple on the Greenbrier. The complete power package, including engine, transaxle and rear suspension, can be removed as a unit. Similarly the entire front suspension can be removed with the front cross member. For minor servicing the rear cargo compartment floor comes up, and oil changes, etc., can be made through a small door in the rear.

FORD ECONOLINE BUS

Ford's Econoline bus is powered by the same 144-cubic-inch Six that is standard in the Falcon sedan. There are several minor differences, however, the most important of which are the heavier bearings which are borrowed from the 170-cubic-inch Falcon optional Six.

Since the Econoline powerplant is mounted in the front, it makes several differences in the interior layout. One of the less desirable features is the elimination of room for a middle passenger in the front seat. Actually, there is a place for a third person, if he chooses to sit on the engine cover. This is practical and the space is sufficient, but the comfort is severely limited, with no backrest and the hard metal for a seat.

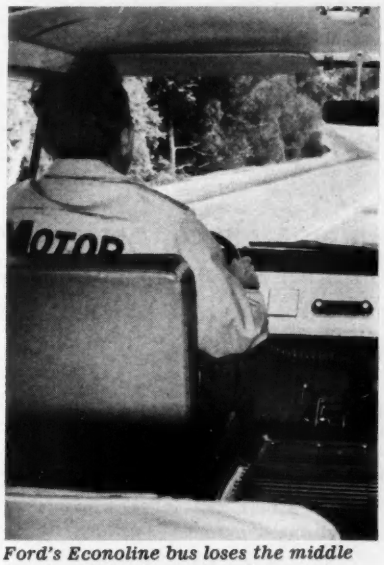
The passenger's seat in front is only the bare minimum for comfort. It has a thin cushion and a canvas-like material with no padding for a back. It is adequate, but little more. Even with this limitation the passenger seat is useful and is also unique in that it folds up (not down) and swings back to give immediate access to the rear passenger, or cargo area. Or, it can be quickly and easily removed to permit loading extra-long cargo.

The second two seats are average for comfort. The second seat is split, one-third and two-thirds, which simplifies getting into or out of the back seat. Both seats remove for maximum cargo capacity. They are held down by a curved piece of metal held in place by a hex nut. This means a wrench must be used, but the lug wrench for the tires fits it.

The Econoline has the better cargo box of the two buses tested. This is simply because it has a flat floor, from the front to the rear. It does lose a little in front, where the engine compartment comes back, but this is not a serious drawback. It also has six doors, with the side and rear doors opening almost flush to the body with the canvas retaining straps disconnected. Strangely, both the side and rear doors are interchangeable — something that will not make too much difference right now, but might mean lower replacement costs in the case of body damage.

To the individual who uses his bus for both business and pleasure the Econoline is excellent. A carton nearly 48x50 inches can be loaded from either door, and items 54 inches high that can be jockeyed through the doors can be hauled upright. Cargo such as appliances, TV sets, upholstered furniture, etc., can be loaded, and since there is no rear shelf to interfere, more of it. In minutes the wagon can be returned to station wagon form for carrying passengers.

Since the Econoline's cargo bed is slightly higher, Ford engineers have included a running board. This is a disappearing affair which slides under the body when the front side door is opened. A rod attached to the door works the mechanism. /MT



Ford's Econoline bus loses the middle front seat due to engine placement, although a passenger can sit here.

Engine accessibility on the Econoline is exceptionally good; cover comes up, revealing entire engine.

Getting in and out of the passenger compartment on Econoline bus is easy, even for a woman in tight skirt. Forward door has a bar which works the running board. When the door is closed, the running board slides back under the body.

DRIVER'S REPORT

The New RENAULT 4-L

by Don Werner

An amazing car design, with a unique plan for U.S. servicing and repair, plus a probable price tag that will be low, low, low

Sts. Maries de la Mer, France

IF THERE IS ANY PLACE in France still off the beaten path, this is undoubtedly it. It's a flat and swampy section of the Mediterranean coastline, not too far from the Spanish border, that reminds me of parts of Louisiana. There are swarms of insects and sticky heat, tall marsh grasses and the smell of vegetation cooking like a green stew in stagnant ponds under the fierce sun. The people are French, but with some Spanish customs like bull fighting. It's an unlikely area in which to find a car of new design, but this probably was what Renault had in mind when it brought several of its latest machines here for testing without undue exposure to the public.

This car actually is so new it still lacks a name and, at this stage, is identified only by a series number as the Renault 4, in standard form, or the Renault 4-L, in a deluxe version. The car will appear initially in Europe in October, but it will not be long before the deluxe 4-L can be bought in the U.S.

The 4-L, which I will confine myself to in this report, is a most unusual car from several points of view. The most important aspect of any car will vary from person to person, of course, but what should be stressed right at the beginning is that the Renault 4-L, despite its low price, is a full-sized car — by European economy-car standards. It simply is designed to be built and sold for the lowest possible price consistent with quality, comfort, capacity and performance.

The best estimate is that the car will sell in the U.S. for under $1200. If this happens, it will be the cheapest car in the imported marketplace for its size and features. A good way to fix the relationship of the 4-L with other economy cars is by direct comparison with four familiar imports.

	RENAULT 4-L	RENAULT DAUPHINE	AUSTIN 850	FIAT 600	VW
Wheelbase	96	89	80	79	94
Length	144	155	130	129	160
Height	60	57	53	55	59
Cubic inches of engine	45	51	51	47	72
Horsepower	26	32	37	32	40
Price	$1200	1385	1295	1400	1595

That figure of 26 hp for the 4-L will be boosted when the car is sold in the U.S. The engine is the same in-line ohv four-cylinder as in the companion Renault Dauphine, with a few modifications, but is mounted in front and drives the front wheels. Any estimates of its performance and fuel economy should consider the car's remarkably low curb weight of just 1300 pounds. I would judge the 0-60-mph time to be in the 25-to-28-second range, with the number of miles per gallon to average close to 40 in normal driving and near 50 with suitable care.

The 4-L is really a semi-utility car. There are four side doors and a fifth at the rear, through which the rear seats can be removed to provide a station-wagon-type cargo area with a flat floor and an unrestricted capacity of 50 cubic feet. When the rear seats are in place, behind them is still a good luggage space of 17 cubic feet.

Not long ago an official of the Ford Motor Company predicted that in two or three years some cars from Detroit would begin to appear with sealed cooling systems that require no attention whatsoever. As usual, Detroit is 'way ahead in its predictions but lagging in getting them on the production line. Renault has beaten Detroit and all the other car makers in the world to the punch — and with a cheap production version at that. The 4-L's cooling system, filled with a special mixture, is permanently sealed. It's good down to −33° F. and up to any heat ranges you can find anywhere. The cooling system needs never be checked. Just forget there is one.

The liquid for cooling is half ethylene-glycol and half water. If it heats up, the surplus is forced into an expansion tank, where it remains until temperatures go down and then is returned to the cooling system. A warning light will flash in the event of leakage, clogging or damage.

This lack of attention brings up another notable aspect of the 4-L. In addition to its low initial price, the car has been engineered for minimum maintenance. No greasing is ever needed. Absolutely none. Only lubrication is changing the engine oil at 3,000-mile intervals, differential oil every 6,000 miles. Rest of routine is tire pressure, brake fluid and battery water checks. That's all.

Another major development forthcoming with the 4-L may be the most significant of all. Renault's announced policy is that all repairs and servicing will be governed by a fixed price list, one covering labor as well as parts. This system has been in effect in Europe for years by some makes of cars. Renault's action in introducing the plan in the U.S. may light the fires for yet another motoring revolution.

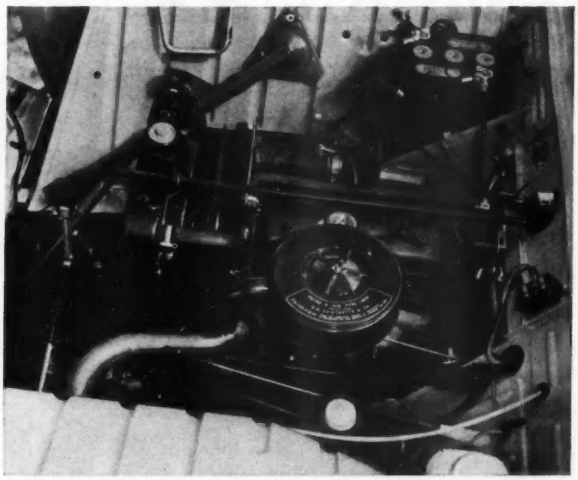
Although I did not have equipment with me in France to conduct a precision road test, I drove the car for several hundreds of miles in order to discover its characteristics. A few miles from the marshy coast the interior terrain changes dramatically to high, rock-capped mountains cut by rugged canyons. It might have been southern Utah or Nevada. The back roads here, coupled with the flats of the sea coast, made a good test course.

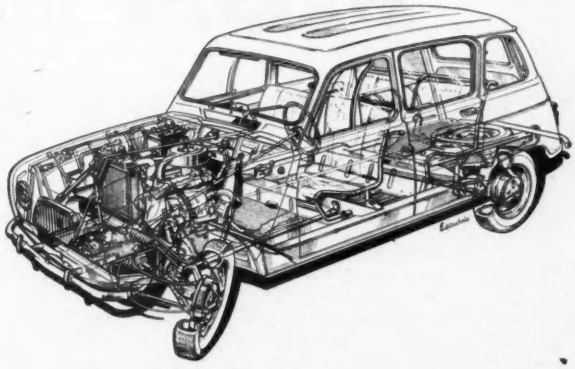
The 4-L has a three-speed manual transmission mounted in front. The gear lever operates through the dash panel and by linkage over the cylinder heads. Synchromesh is on the two top gears. The steering is by rack and pinion and very quick. I estimate the car I drove had a true top of 68 mph — the gearing through the 4.2 rear axle equals 14.5 mph per each 1,000 engine rpm and with a maximum engine revs of 4800 it means a theoretical top speed of about 69 mph.

One section of my route was not a road, but a faint track across loose dirt and rocks on steep grades. It would have been a good test for any four-wheel-drive vehicle. The 4-L traversed it with ease, except for one blown tire. With heavy-duty rubber, it can be classed as a good off-the-road machine. Springing is by torsion bars both front and rear. Clearance under the flat underside is just eight inches.

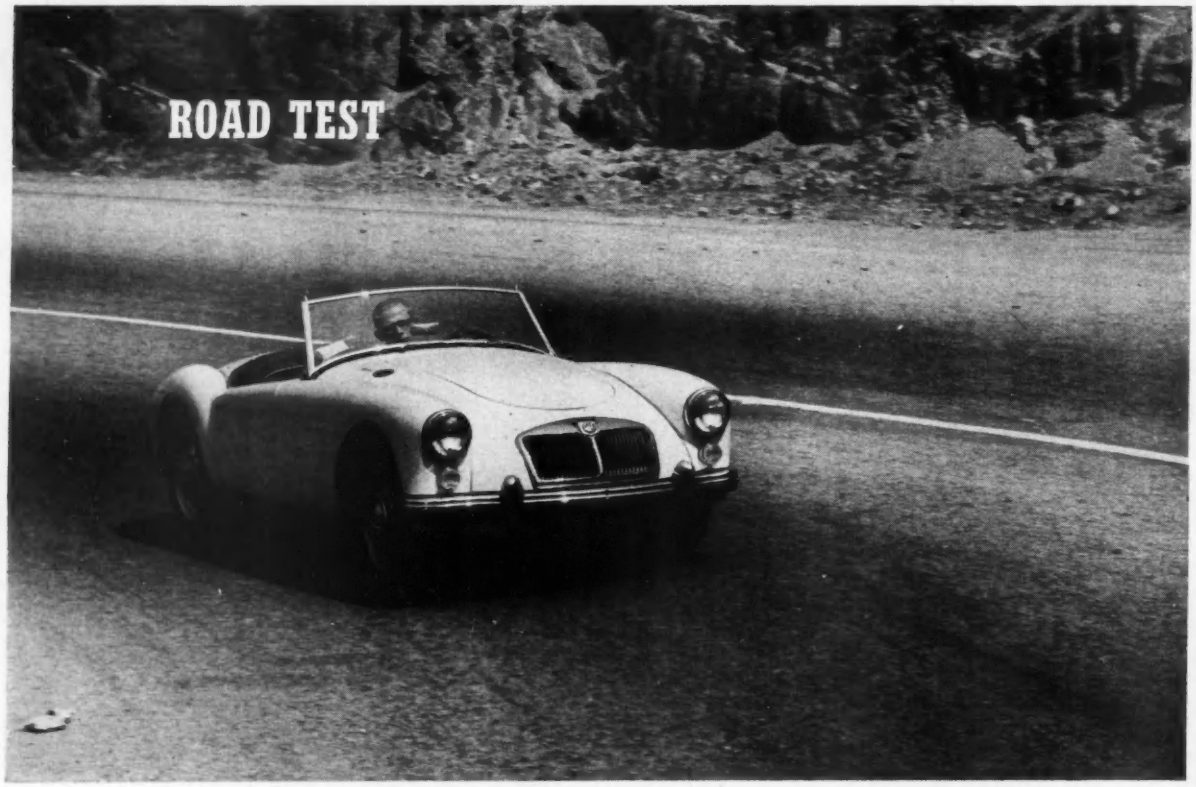
The seats in the 4-L are simple — just elastic fabric between a tubular frame and padded by foam rubber. I will testify to their complete comfort and will go one step further and say they are as good as the best padded bench seat I've ever sat on in any luxury car. /MT

IN A BACKGROUND THAT LOOKS MORE LIKE MID-AFRICA THAN SOUTHERN FRANCE, MT'S EDITOR PAUSES WHILE DRIVING NEW RENAULT 4-L.





Many of the chief features of new Renault are shown in three illustrations here. Above, the engine is basically same as that of the Dauphine, but with a permanently sealed cooling system that is never serviced in any season of the year. Also note the transmission linkage that extends through wall over center of engine and down to the gearbox in front. The entire layout of the car is visible in the line drawing at the upper right. In the photo at the right, the rear seat of the Renault is removed through the rear gate to form a station-wagon type of utility vehicle. Even with the seat in place, there is good luggage space in the car.



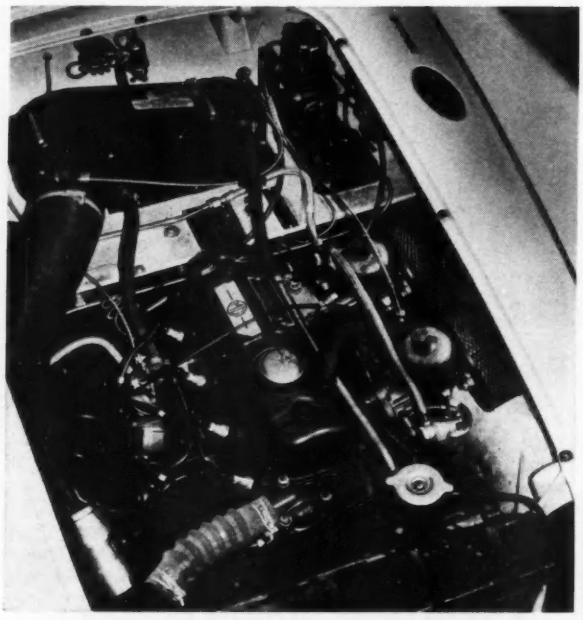
MGA 1600 MARK II

This latest variation of the sports car pioneer reemphasizes all of the factors that have made it a best seller

IN THE JARGON of the advertising trade, MG has created for itself a "favorable public image." Favorable in this sense means that the MG is automatically recognized as a sports car by the U.S. motoring public. No one need make any excuses or qualify the term in any way — the MG fits. This has been true since 1948, when the cars first began to be imported to the U.S. as the TC series, and has held through the TD, TF and A groups — some 125,000 cars imported in all. Why? Simply because the MG is a true sports car. In its price category it has come to be the standard against which other sports cars or would-be sports cars are judged.

The significance of the MG, the fact that MOTOR TREND had not performed any sort of test on one since September 1959, and the introduction of a new model for the A series, the 1600 Mark II, added up to an MG test. As with all cars, there are shortcomings and advantages. Pointing them out in an objective fashion should enable us to place the car in proper perspective with other sports machines and gain some indication as to its suitability for the widely varying conditions in the U.S.

Outwardly, the Mark II has had a simple facelifting around the grille and taillights; it retains the basic A roadster silhouette and dimensions. Key sizes include 94-inch wheelbase, 47.5-



MG-A's 1600 is powered by a variation of British Motor Corporation's B model engine. Bigger displacement, higher compression, other changes improve performance.

and 48.75-inch front and rear tread, 156-inch overall length, 58-inch width and 50-inch height. Under the hood is the biggest change, some 10 more horsepower than the 1600. Acceleration is slightly better, while top speed has been raised to considerably over 100 mph (107, factory rating) and engine durability is said to have been increased. From the driver's view there is little interior change except for increased use of leather trim in the dash area. Handling characteristics remain appreciably the same as in previous A's.

The engine, a variation on the British Motor Corporation's B model, has gained a well-deserved reputation for reliability. With the changes that stamp it a Mark II, it should prove even better. Compared to the previous 1600, it has been bored .03-inch, increasing displacement 2.1 cubic inches to 99. Intake valves are nine per cent bigger, exhausts up 11 per cent with ports revised to take advantage of the extra valve area. Compression is up from 8.3 to 8.9 with horsepower up to 90 and torque raised 10 lbs.-ft. to 97 at 4,000 rpm. Piston pins are slightly larger, therefore stiffer; connecting rods have been increased in the H-section for greater stiffness, and the crankshaft webs are ⅛-inch thicker, which means that the main bearings are narrowed slightly.

More important to the consumer than the relatively minor engineering changes is how the engine performs under varied conditions — creeping traffic, high speed, mountain grades, broiling desert, sub-zero or any other condition likely to be encountered. It is impractical to perform a test including all climes; in Southern California, however, it is possible to find all of them except the latter. Generally, the MG's engine took it all in stride. No tendency to overheat was observed in traffic, hot open country or climbing hills, although an unpleasant amount of warmth was generated and passed through the transmission tunnel into the cockpit. Idle was smooth and regular, with cold starting simply a matter of brief choking. Hot starts, often a sports car problem, were virtually instantaneous.

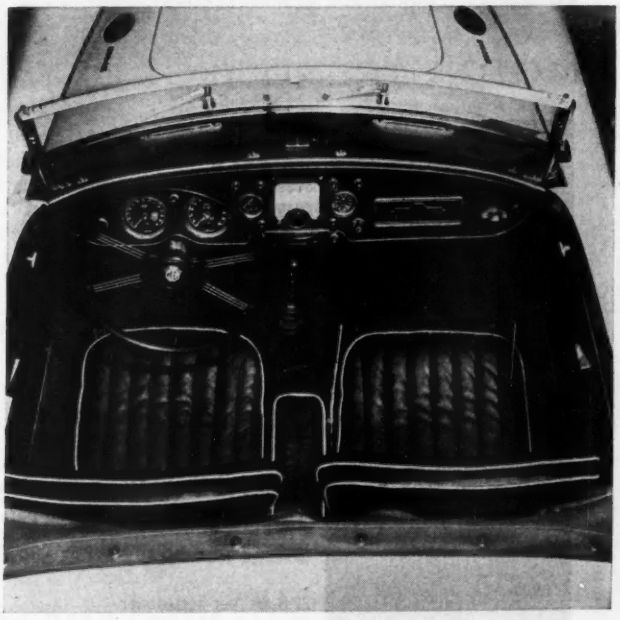
The MG-A makes a nearly ideal sports car for the beginner. By that, it is not meant to limit the car's usage to novices at sports motoring; many of the marque's biggest boosters have owned several and would have nothing else. The reference is intended for the owner who has the urge and finances to go racing on an expensive scale, yet recognizes the fact that there must be a learning period in something relatively safe. (Many competition drivers have, in fact, derived so much pleasure from racing in closely matched production MG events that they have not bothered to step up.) The characteristics that make the A a good learner's car also make it a delightful general purpose street machine. The car was felt to be a well integrated unit — that is, gearbox, handling, ride, brakes acceleration and performance generally were all part of the same car. No one feature was so outstandingly bad or good that it was considered to be either a total detriment or the starting point for another and better car.

At 2⅔ turns, lock-to-lock, the rack-and-pinion steering is quick and sensitive. Except for the low number of turns, it will be found to be little different from typical domestic late-models under normal driving conditions. Wheel action is slightly heavy at low speeds, easing up as speed is increased. There is a desirable tendency to understeer, which means a definite wheel return action while straightening out. At higher racing-type speeds, it is quite easy to break the rear wheels loose in a corner and hold them out by applying power. Easing off induces the rear end to come around more sharply and the car will spin unless steering correction is applied, but it is all telegraphed to the driver — nothing tricky or difficult as in the case of some extremely high-performance sports cars. The result is that it is an easy task for a beginner to safely learn racing techniques, provided an open practice area is available. Such knowledge, essential on the race course, can be invaluable in a highway emergency. Not the least of safe, fast cornering is a low amount of body roll; it will be imperceptible to a driver who has been used to larger, softly sprung cars.

When one considers emergencies, brakes are uppermost. The A has 11-inch-diameter discs on the front, with 10 x 1¾-inch drums on the rear. Brake pedal pressure is moderate, they do not fade under repeated high-speed stops and they continue to stop in a straight line. There is little else that can be said about brakes that perform as good brakes should.

One of the oft-touted joys of driving a sports car is shift-

Changed grille is one of the few external changes in the new MG. But the engineering differences have made many changes since last MT road test.



Well-instrumented interior has changed little. True to sports car design, MG has low seats, adjustable steering wheel and minimum closed-car accessibility.

ing through a four-speed gearbox, not simply for arm exercise but for control such as most automatics cannot give. The MG-A will satisfy the enthusiast on that point. The tunnel-mounted lever is positioned in excellent relationship to the wheel. Synchronized on the top three gears only, it was felt that gear action was slightly stiff. Compensating for that is a good choice of ratios and short throws with practically no slop in the remote linkage. Considering engine size, shifting can be held to an absolute minimum if one desires. For example, it was entirely possible to pull smoothly in fourth gear from 1,000 rpm, equal to 17.85 mph. Such treatment is not recommended, but it can be done. Ideal use of the gears involved keeping revs above 2500, with 3,000 a happier choice. Between 3-5,000, incidentally, the acceleration response was quite lively.

Shifting, especially downshifting, a sports car can become a sort of lightfooted ballet for the experienced driver who has mastered the heel-and-toe technique, which means to use the accelerator to synchronize engine with gears while simultaneously braking. It can be done in the MG, using an edge-of-foot style rather than true heel and toe, but the pedal spacing was considered crowded. This has always been true with MGs, at least since TC days, and a driver with a broad foot must be constantly alert to be certain of hitting the correct pedal.

While the acceleration times recorded were not sensational, they are quite creditable, matching the factory's acceleration curve. The car was definitely capable of staying with any traffic — ahead of much of it. Taking off, it was almost too easy to induce wheelspin in first gear. A fast shift to second produced a solid clutch bite but no wheelspin, and so on through the gears. Only when shifting at deliberately abusive speeds was there any evidence of slippage in the eight-inch-diameter clutch, and this when the clutch was engaged while the engine was still turning in excess of 5,000 rpm. Clutch pedal pressure is moderate on a reasonably short travel. Acceleration figures were taken using a rev limit of 5800-6,000 in the gears. The limit was determined by the MG's tachometer, which has an amber segment beginning at 5500, showing red between 6-7,000 rpm.

Seating was judged to be good; even those who preferred chair-high seats quickly became accustomed to the MG's seats, which are only 8½ inches from the floor at the highest point. This means legs out, but there is plenty of length in which to stretch out while an eight-inch travel on the seat adjustment accommodates most heights to the pedals. The steering wheel, too, is adjustable. However, an extremely long-legged driver who prefers the wheel close to the dash for an arms-extended driving position will probably find some wheel/knee interference. The foam cushions, 18½ inches wide by 21 long, give good knee and thigh support. Backrests, mildly contoured, have good holding power; also a center armrest adds to one's sense of security from sliding.

There are a couple of areas where the A can be criticized, but they become subjective matters of individual taste. As an example, cockpit storage is definitely at a minimum. There are door pockets only. Space behind the seats is taken up with top (when folded) and side curtains, which fit in a hanging pocket. The small trunk is rated at 5.75 cubic feet, and even this is best suited for soft parcel storage. Two persons planning any touring would be well advised to add an external luggage rack. While the top is weathertight when used with the sliding window curtains, erecting it is not a detail that can be completed by one man while remaining seated in the car. It is an awkward operation for one person and is much more easily performed by two.

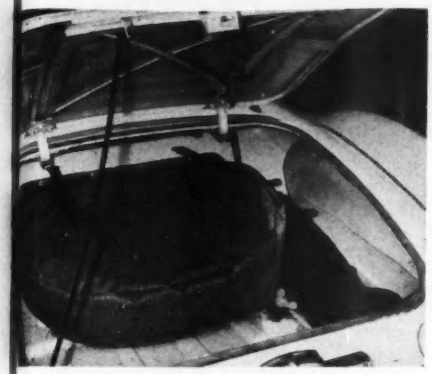
Ride is another subjective area that is difficult to pin down, but it was concluded that the MG's ride, while firm, is good. There is practically no tendency to choppiness, often felt in tightly-sprung, short-wheelbase cars. Even during off-pavement driving the suspension soaked up bumps and holes in a gratifying manner.

High noise level and wind buffeting can be companion features of small open cars. Both have been held to a minimum in the MG. Because the driver sits quite low in the body, top-down driving is reasonably wind-free. There was actually more annoying wind noted with the top up and side curtains out. Engine noise is moderately high, a distinctive note recognizable as MG. One saving grace is that the exhaust noise is not fatiguing at high cruising speeds.

During a period when it has become the fashion to build cars with unit construction, whether any advantage is realized or not, the MG clings to a separate box-section frame with body bolted on. It doesn't seem to create any particular weight penalty as compared to the possibilities of a unitized body-frame. Suspension is quite conventional, upper and lower A-arms at front with coil springs and Armstrong lever shocks. Anti-roll bar is optional, although there was none on the

MOTOR TREND TEST DATA

TEST CAR:	MG-A Mark II 1600
BODY TYPE:	Roadster
BASE PRICE:	$2499
ENGINE TYPE:	Ohv 4
DISPLACEMENT:	99 cubic inches
COMPRESSION RATIO:	8.9-to-1
CARBURETION:	Two single-throat SU
HORSEPOWER:	90 @ 5500 rpm
TRANSMISSION:	Four-speed manual
REAR AXLE RATIO:	4.1
GAS MILEAGE:	17 to 21 miles per gallon
ACCELERATION:	0-30 mph in 3.9 seconds, 0-45 mph in 7.3 seconds and 0-60 mph in 14.2 seconds
SPEEDOMETER ERROR:	Indicated 30, 45 and 60 mph are actual 28, 41 and 55 mph, respectively
ODOMETER ERROR:	Indicated 100 miles is actual 98 miles
WEIGHT-POWER RATIO:	22.8 lbs. per horsepower
HORSEPOWER PER CUBIC INCH:	.91



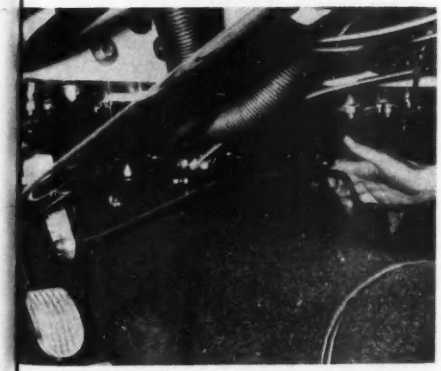
Small trunk is best suited for around-town errands. Longer trips with luggage will require an outside rack.

MOTOR TREND test MG. Rear suspension of the solid axle is via a pair of six-leaf semi-elliptic spring and double-acting Armstrong lever shocks.

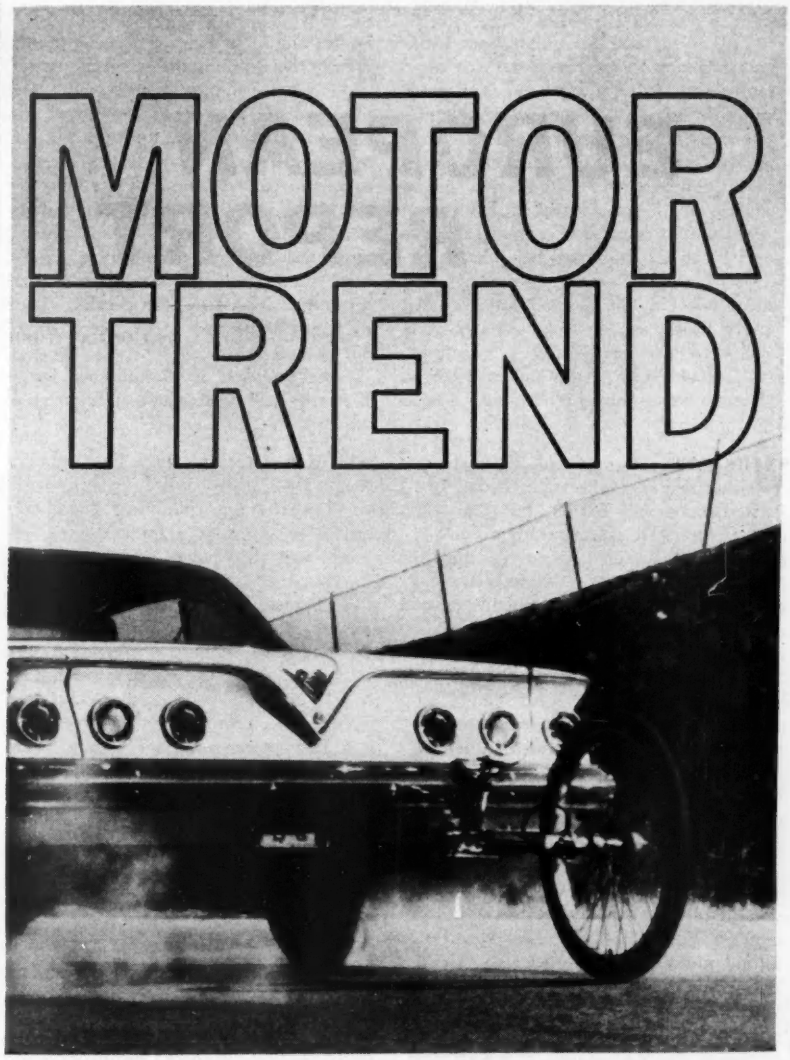
Panel fit and finish, which can spell the difference between consumer satisfaction and disgust, were found to be good. The off-white paint was well applied, doors closed solidly and hood and deck were installed to close tolerances.

The base price shown, $2499, can be raised through a number of desirable extras, including wire wheels at $100, tonneau cover $35, heater $65, windshield washer $15, and whitewall tires $35.

Anyone considering the MG strictly as an economy car should probably look elsewhere; there are other small roadsters and numerous sedans that will deliver better fuel mileage. But as a fun car, an automobile that features basic driving pleasure, it is hard to beat. The limitations of a two-seat roadster are quite obvious. If these can be overlooked, the MG-A 1600 Mark II is an outstanding automobile for the money. /MT



Throttle linkage inside the passenger compartment is a carryover from right-hand-drive European version.



MOTOR TREND brings you exclusive monthly reports on all the very latest news happenings in Detroit, "The Motor City" . . . Unique "Round the Clock" reports on major European automotive events . . . Down to earth comparison charts and specifications reports on all the current car models . . . America's finest fully illustrated road tests.

MT-1061

MOTOR TREND Magazine 5959 Hollywood Boulevard, Los Angeles 28, Calif.

☐ Bill me later for $3.50 (12 issues)

☐ $3.50 enclosed—send me 2 extra issues—making total of 14 issues of MOTOR TREND.

Name_____

Address_____

City_____ Zone____ State_____

NOTE — If you are renewing your current subscription, please indicate date of expiration of your subscription ..... date subscription runs out — can be found on mailing label.

EUROPEAN REPORT

by Gordon Wilkins

WITH FOUR international auto shows scheduled for the fall (Frankfort, Paris, London and Turin), European car manufacturers are getting ready a big collection of new and improved models. Industry leaders, like Volkswagen and Renault, and some of the smaller ones, too, have decided not to export their newest designs to the U.S.A. immediately. They want to study the market reaction, build up stocks of spare parts and cure teething troubles while assessing the current evolution of the North American market. The idea that any imported car would sell in the States was abruptly shattered when the bottom fell out of the market at the end of 1960.

The German industry, which has gone on pushing up its output while production in the rest of Europe has been lagging, is now solidly established as the second greatest producer after the U.S.A. Besides the new Volkswagen 1500, there will probably be a new three-liter Mercedes with a V-8 engine in a body similar to that of the 220. A question mark still hangs over the future of Borgward as Dr. Carl Borgward races against time to raise the cash he needs to exercise his option to buy back the Group from the State Senate of Bremen, which took it over when it got into financial difficulties. B.M.C. sent a team from England to investigate a link-up but turned it down.

Among the smaller German factories, Hans Glas, maker of the miniature Goggomobils, manages to weather market fluctuations partly because he has a prosperous business in agricultural machinery. He will show at Frankfort his biggest and fastest car yet, the Glas Coupe S-1004, with a front-mounted four-cylinder single ohc engine of 993 cc (57 cubic inches). It produces 42 hp net and is said to give a maximum speed of 84 mph. This looks like a competitor for B.M.W., which is now doing well with its rear-engined two-cylinder 700, but they too have plans. Their 700 Rennsport Roadster has been winning races with a new air-cooled flat twin of 697 cc (42 cubic inches) mounted ahead of the rear axle in a light tubular frame. This extraordinary engine, with two camshafts, one chain-driven and one gear-driven to each cylinder, gives 70 hp and will soon power a very fast little G.T. coupe.

In France, design goes topsy-turvy. Renault, after making millions of 4-CVs and Dauphines with rear engines, adopts front-wheel drive for the new car which replaces the 4-CV. But Simca takes the opposite line, turning from front engines to a rear power unit for a new four-cylinder small car of about 1,000 cc (61 cubic inches), now in prototype form which should be out in time for the Paris Salon. Knowing the close, though unacknowledged, connection between Simca and Fiat, Italians are already asking if this indicates the shape of a new Fiat to replace the 600, but if it is, Fiat will be too busy with its existing models to do anything about it for a year or two. They have just redesigned their two six-cylinder models. The 2300, which replaces the 2100, has four headlights, a bigger engine, disc brakes and a new rear suspension. Increased bore and stroke raise engine to 2379 cc (145 cubic inches) to give 105 hp net, and the de Normanville overdrive is now optional. The rather complicated rear suspension, with coil springs and laminated spring radius arms, is replaced by normal half-elliptics, allowing increased seating space and trunk capacity.

Alfa Romeo is not yet sold on disc brakes for the Giulietta, but it has a new type of drum brake with three shoes, giving increased lining area for the front brakes on the SS and SZ. Once again there are rumors of the long-awaited six-cylinder engine for the Alfa Romeo 2000 being made ready for the Turin show.

Negotiations for production are reported under license of the baby Ferrari coupe with engine increased to 1,000 cc (61 cubic inches) by a new Italian industrial group.

In England Rootes has announced a new Singer model, the Vogue. It has the existing 1.6-liter (97-cubic-inch) engine already used for Sunbeam models and is completely conventional in mechanical design. Singers are not exported in great numbers, but the car is interesting because it has the new body shell which will also form the basis of new Hillman and Sunbeam models to be shown in the fall.

One of the most extraordinary sports coupes ever seen on British race circuits is the Marcos G.T., with a chassis and body made entirely of plywood. It weighs only 960 pounds and is powered by a hot Ford Anglia engine which propels it at over 100 mph. The body lines were designed by Frank Costin, who designed Lotus bodies for years. It has been highly successful and the requisite 100 having been sold, it has now been homologated as a G.T. car for International competition in the 1,000-cc (61-cubic-inch) class. Negotiations are in hand for sale on the West Coast, and an improved body is just

NSU Wankel engine may have a competitor in the radically-new Selwood rotary engine, designed by Cecil Hughes. Selwood is a compact piston engine with a rotating cylinder block, no valves and no crankcase.

going into production.

Leading British manufacturers have agreed with the government to incorporate attachment points for safety harness in future cars. First to implement the decision were the B.M.C., who are already building attachment points into all their passenger cars and offering an approved three-point harness as an optional extra, ready to bolt on. After years of indifference, the British public is now accepting safety harness because of the rising accident rate on Britain's overcrowded roads.

The value of safety harness is underlined by the first report from the Birmingham Accident Research Group, which is investigating accident injuries in the way pioneered by the Cornell Group in U.S.A., with finance provided by the Automobile Association. Besides the usual plea for abolition of sharp projections inside and outside the car, they commend the collapsible steering column, which has already proved a life-saver on the Triumph Herald.

There is news of the revolutionary NSU Wankel engine, which may bring nearer the day of a practical production model. Licenses to build have been acquired by Perkins, the big British diesel engine manufacturer, now owned by Massey Ferguson and by Toyo Kogyo and the Yanmar Diesel Engine Company, which manufactures small cars and diesel engines in Japan.

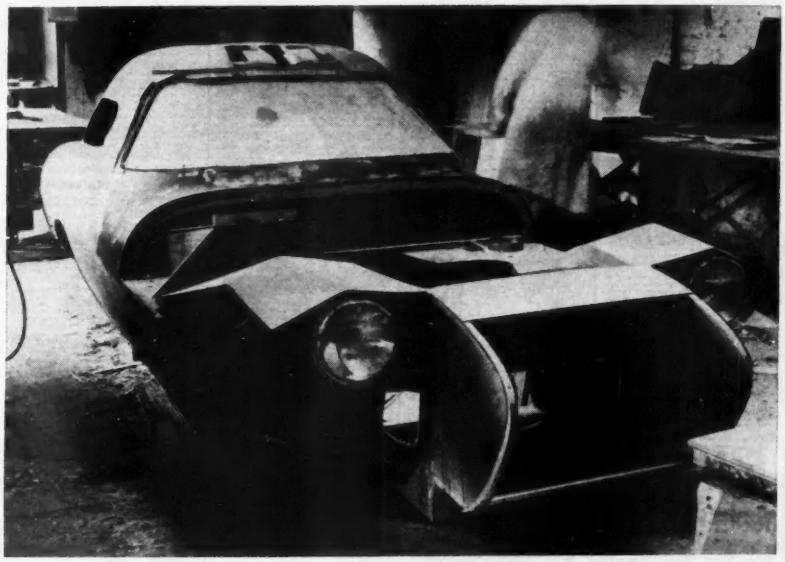
But Britain may have a competitor to it in the Selwood rotary engine, recently demonstrated to leading engineers. Designed by Cecil Hughes and built by William R. Selwood Limited, an engineering company near Southampton, it is an extremely compact piston engine with a rotating cylinder block which acts as its own flywheel. It eliminates reciprocating motion of the pistons and the resulting side thrust and friction losses. In the center is a stationary shaft, and on it a bushing is mounted at an angle carrying the bearings for a spider, on the arms of which are attached six ball joints carrying six curved double-ended pistons. These pistons work in 12 opposed curved cylinders (two sets of six) in a barrel-shaped cylinder block running true on the stationary shaft. Because of the difference in angle between the axis of the spider and the main shaft, the pistons travel from end to end of the cylinders and force the block to revolve with them, but the pistons do not reciprocate and are never stationary at top or bottom center. The engine has no valves; it is a two-stroke and as there is no crankcase, compression has to be fed by a low-pressure supercharger. The first experimental model, with a compression ratio of only three to one, develops little power but its sponsors are delighted with its performance and are going ahead with a batch of an improved design, some of which will be mounted in cars for demonstration. By using light alloys throughout with chromium-plated cylinder bores, they hope to produce a 61-cubic-inch engine in a block only 9½ inches in diameter to weigh half a pound per horsepower. There are still plenty of snags to overcome, but it is one of those ingenious yet simple ideas that make you hope that it works.

High prices offered by American collectors for veteran and vintage cars from Europe have forced defensive measures. France now tries to ban exports and in England, buyers of the rarest cars at the annual auction sale at Beaulieu are required to sign a statement that they will not be exported. Highest price at this year's sale was paid for a perfect 1912 Alfonso XIII Hispano Suiza, one of the earliest true sports cars. It was bought by Lord Montagu for $4420. A few minutes later an American woman tourist offered him $5700, but he refused it. Oldest car in the show was a 1900 single-cylinder De Dion. Bidding went up to $3800, but it was withdrawn as the owner valued it at over $4500.

Reputedly the richest man in the world, Paul Getty recently launched his Veedol oil on the British market. When I went down to interview him for television at Sutton Place, the fabulous Elizabethan mansion in the south of England which he bought from the Duke of Sutherland, he was hoping to arrange his first visit to the U.S. in eight years, but crisis news from Kuwait, whose oil has provided many of the Getty millions, was keeping his telephone ringing far into the night.

In the whole history of motor racing there have been few rises as meteoric as that of the young Italian who won the French Grand Prix at Reims. Twenty-six-year-old Giancarlo Baghetti was driving in his first World Championship event against all of today's top-flight drivers, and he showed the maturity and self-control of a real champion. He had driven in only two previous Formula I races, Syracuse and Naples, and he won them both. His Ferrari is not an official works entry, but a second-rank car with 60-degree V engine instead of the latest 120-degree unit used by the works team. It was loaned by Ferrari to a private outfit, the Scuderia Santambroeus. Ferrari, smarting at the way the Italian church and press criticized him after the death of Castellotti and Musso, has since refused to employ Italian drivers directly.

After the three works Ferraris had been eliminated with mechanical troubles and one by an accident, Baghetti moved up in a wheel-to-wheel battle with the two works Porsches driven by Bonnier and Gurney, trading places with them all around the fast Reims circuit. Two laps from the end Bonnier's engine broke. On the very last lap, Gurney got ahead at the last corner. Baghetti slipstreamed him almost to the finish line, then timing his move perfectly, pulled out and passed to win by a few feet. There has been nothing like it since young Mike Hawthorn beat Fangio on the same circuit in 1953. /MT



A newcomer to the English racing circuits is the lightweight Marcos G.T. Shown here in construction, the body is built entirely of plywood. Entire chassis weighs in at less than 1,000 pounds. Designed by Frank Costin, of Lotus fame, the extraordinary sports coupe has been successful in Britain.

JC WHITNEY & CO Save Most on All Auto Parts & Accessories at J. C. Whitney

Chrome Door Lock Knobs

TRIPLE CHROME PLATED Change colored door lock knobs to all chrome. Coordinates interior of car and brightens inside of door. Sizes to fit all cars listed below.

Stk. No.	CAR	Stk. No.	CAR
673	G.M. thru '60	673	All Ramblers
673	61 G.M. All	673	Ford Pnd.
673	Chrys. Prod. (exc. Falcon & Comet)		

Specify car, year and model when ordering. For PAIR ....POSTPAID 75c

HI-SPEED ELECTRIC SIREN

Developed especially for the U. S. Navy & Coast Guard. Now used by hundreds of Fire & police departments, buses, ambulances, etc. Complete with bracket, 10 ft. of cable & push button. Green & metal.

No. 71—6 Volt Each ....POSTPAID $13.39
No. 91—12 Volt Each ....POSTPAID $16.49

ANTENNA POWER BOOSTER

Increases Receiving Range of Car Radio 4 times! Easy to install, clearer car radio reception in fringe areas, or on the road. Boosts lost signals to listen. Almost doubles the range of car radios. Perfect for travelers, professional men, anyone interested in 2 antennas.

No. 436 ....Each ....POSTPAID $5.00

CHROME PLATED RIPPLED GENERATOR COVERS

Add the sensational beauty of ripples of chrome to dress up your engine.

Easily installed without power tools on generator from the engine.

Catches light rays from every angle to sparkle with a jewel-like brilliance that makes it a real classic addition to any engine. Made of heavy gauge steel.

Catches light rays from every angle to sparkle with a jewel-like brilliance that makes it a real classic addition to any engine. Made of heavy gauge steel. For the following cars:

40-61 Buick	40-61 Chev.	40-61 Olds.
40-61 Cad.	40-60 Ford	61 Ford
	40-60 Merc.	

Specify Make, Year, and Model of car and whether with or without power steering when ordering.

No. 421—Each ....POSTPAID $2.25

KANDY APPLE SPRAY PAINT

Your two-coat lacquer paint job gives you the most brilliant, glamorous and spectacular finish you've ever seen! There's nothing like Kandy Apple!

Kandy Apple is the sensational new lacquer paint that has been used on custom show cars throughout the country. This new low pressure spray is used by many professional painting experts. Can be used on all metal or wood surfaces—even on cars, trucks, motorcycles, wheels, etc. Comes from 7 distinctive colors to choose from. Each can has enough of color you are to be used as top coat spray over Gold undercoat. Kandy Apple is an exclusive combination 16-oz. aerosol can.

Top Coat Color	Stk. No.	Top Coat Color	Stk. No.
Red	3924	Tangerine	3925
Purple	3926	Clear	3927
Blue	3916	Lime Gold	3918
Burgundy	3917	Gold Undercoat	3919

All numbers, per can ....POSTPAID $2.00

SHAGGY REAR DECK MAT

- Beautifully customizes car interior
- Protects rear deck from scratches, dirt, brushing
- Easy to run over
- Fits all cars.

Luxurious hi-pile top quality woven viscose faces mat with non-skid latex back in choice of white, pink, or black. Large enough to fit the widest rear shelf. Can be easily trimmed to exact fit with scissors or razor blade. Can be easily washed when necessary.

No. 884A	—White	Each $5.25
No. 884B	—Pink	Per Yard
No. 884C	—Black	$7.25

Shaggy Material. Same material as described above—can be used for customizing, covering seats, door panels, etc. 36" wide

No. 885A	—White	Per Yard
No. 885B	—Pink	$7.25
No. 885C	—Black	

Brand-New Car Plaques

High Fog Catching Design—For the Individual —Per Side.

Plaques have ground raised letters and design. Leatherette-like background has baked-on and hardened enamel finish. Made of die cast aluminum—rustproof. Large size 5"x9". Can be mounted in 2 diffs.

FIREBIRDS		FLINTSTONES	
No. 554 Y		No. 554 Fl.	
NO CLUB		HAVE ORDER	
529-A		529-B	
UNTOUCHABLES			
529-D		529-E	
NOW I AM MY OWN		PIONEERS	
529-F		529-G	
OUTLAWS		I'M FROM DIXIE	
529-H		529-K	
All Nos. Each			$2.98

SNAPON Stainless Steel DOOR EDGE MOULDING FITS ALL CAR DOORS

- Protects door edge from chapping and rusting.
- Adds beauty to the car.
- Easy to install — snap in place, no tools needed—won't come off.

Made from highly polished, rustproof stainless steel.

Sold in pairs, enough for two door edges.

No. 666—Per Pair ....POSTPAID $1.25

WINDOW ANTI-RATTLER

- Stops all annoying window vibration and rattles.
- Fits most cars—slips on between old and new glass.

Handy, useful window anti-rattler that consists of rubber roller fitted to tempered spring — inserts in seconds, even pressure against window. Stops vibration and rattling. Cadmium plated spring, grey enameled base. Will not chip or scratch finish. Sold in pairs.

No. 887—Per Pair ....POSTPAID 70c

KRAZY DECALS

Two unusual, colorful, humorous decals that will catch every eye. Printed in yellow, red and black. Can be placed on hood, trunk, fenders, doors or any suitable spot on car. Each large decal is complete with two matching smaller decals for dash or window use. Will not fade, chip or peel. Easily applied to any clean, smooth surface.

Large Krazy Kar Kal, 8" wide x 11" high ....POSTPAID 1.00
Krazy Kar Kal, 5" wide x 9½" high ....POSTPAID 1.00
No. 323—Each

Chrome-Like Finish

- An Amazing New Do-It-Yourself Process.
- Gives a Brilliant Chrome-Like Finish.
- With this new finishing process rusted, pitted or worn chrome can be restored to its original lustre to match the original finish. No need to have chrome replated at high cost or spend a large amount of money to have parts re-chromed. Dents, scratches and pitted chrome can be refinished to their original lustre. Not a paint—not a lacquer. Just a finishing process as well as protects.

Complete Kit, Black, Each $8.95
No. 664 B —White, Each 6.50
No. 664 C —Black, Each 6.50

Twinkle Glitter Spray on ALUMINUM FLAKE

For use with lacquer and acrylic paint.

- Adds more sparkle to your car than ever or acrylic paint.
- Can be mixed and sprayed with any lacquer and acrylic.
- Comes from 5 brilliant colors.
- Ideal for custom paint jobs—for a unique sparkling finish on any car.

Twinkle Glitter is aluminum foil cut into perfect tiny squares. When mixed and sprayed with any lacquer or acrylic, it lays flat and reflects every ray of light for a sparkling effect that can't be duplicated. Each of the 5 colors is available in ½-lb. or 1-lb. sizes. Complete with easy-to-follow instructions.

Color	½ lb. Stk. No.	Each	1 lb. Stk. No.	Each
Gold	3512	$5.50	3522	10.00
Red	3513		3523	
Blue	3514	POSTPAID	3524	POSTPAID
Silver	3515		3525	

CUSTOM CAR PLAQUES

YOUR CLUB NAME, DESIGN and TOWN MADE TO ORDER

For the Group or Club Desiring Custom Plaques of Their Own Name and Design.

Durable Cast Aluminum — choice of Black, Green, Red or Blue background.

Plaques are made from durable cast aluminum — 5" x 9". ⅛" thick.

Furnished in choice of 5 different backgrounds with "high-lite" polished lettering and design. Complete instructions. Price is for 10 plaques—price for the 10 plaques includes postage cost, so extra plaques can be furnished in any quantity desired. We will hold your pattern to fill any future orders from you. A minimum of 6 plaques is required on overseas. Because plaques are made to order, payment must be made in full in order to facilitate handling. Our usual 100% satisfaction or money back guarantee applies. C.O.D.'s cannot be accepted.

ORDERING INSTRUCTIONS: Please specify design and lettering (enclose sketch), also state color background desired and if mounting holes are needed, show position on sketch. Allow 2 weeks for delivery.

No. 816—All Styles, Lots of 10 ....$39.95
Additional Plaques, Each $3.98

FRAME JACK

Lifts from Floor Between Wheelbase and Bumper of Trucks, Trailers, Etc.

Capacity 1000 lbs.

Delicately Handled for into sealed cars. Can be used for all cars. Ideal for cars with Cushioned Ride.

Safest and easiest operating jack. Twin base for safer, solid support and easier lifting. Handle turns left hand. Fits snugly against any frame or axle—requires only a fraction of lift height necessary for removing tire, or working under any car. Length 30"—height lowered 5". Height raised 18"—Complete with handle.

No. 769—Each $6.95

PAY LESS THAN EVER for Star Fire CAP SPINNER

Beautifies the Car the Easy Way. Dresses up the hub cap. Gives your car that custom look. Heavily-chromed on stamped steel. Easily attached — no special tools needed. Cap be used on ....POSTPAID $1.79
Add Sparkling Beauty to Any Engine With Chromed Steel Coil Covers

PLAIN DESIGN RIPPLED DESIGN

- Easily installed in seconds—fits over any standard size coil.
- Plain Design—Makes a coil look like a custom chromed job—adds eye-catching appeal to any engine. Fits on coil perfectly.

No. 439 Each ....POSTPAID $2.00

- Rippled Design—Sparkles like jewels — reflect light from all angles for a dazzling effect. Perform a functional job too—helps dissipate the heat from the coil, increasing its life. Keeps coil functioning efficiently for full power and gas fill perfectly.

No. 438 Each ....POSTPAID $2.25

BLACK OR WHITE FULL WIDTH FLAPS

For Station Wagons — For All Cars

- Keeps dust, dirt, and exhaust fumes out of car interior when rear window is open.
- Protects valuable luggage from soiling.
- Keeps dust and dirt off of rear window.
- Protects tailgate from damage due to stones, tar, mud, etc. when in open position.

New full width flap that can be easily installed on any station wagon or car. Helps keep dust, dirt and exhaust fumes out of the rear of a vehicle in motion. Flap is easily installed in the frame of any station wagon or car. Made of top quality rubber, complete with fittings for easy installation. Beautifies as well as protects.

Complete—Ready to Install Convertible Rear Windows

- Window made of tough, flexible, crystal-clear plastic.
- Folds down with top.
- Easy installation—assembly—ready to install with needed trim, tacks, trim ties, and heavy duty zipper. Perfect for replacing broken, scratched or discolored rear windows. Complete with easy-to-follow installation instructions which show step-by-step procedure. Windows approved for use in all 50 states.

IMPORTANT: HOW TO ORDER—Each window is made for the specific car make, year and model. Please specify the following information when ordering: Car Make, Year and Model; Outside Color: Black, White or Tan; Whether Plastic or Tan Fabric or Vinyl. Windows are available for All American Convertibles.

No. 815—Vinyl Plastic, Each $12.95
No. 816—Fabric, Each 17.95

Chrome Plated Wire Looms

With or Without New Red Spark Plug Cables.

FOR OHV ENGINES — FOR FLATHEAD ENGINES

These beautifully designed chrome plated tubular steel wire looms (custom engineered for each make of motor) add the final touch of beauty. Practical as well as beautiful, they are designed to keep spark plug cables away from engine heat. Complete with engine-enhancing red spark plug cables, or less cables.

	With Cables Stk. No.	Per Set	Less Cables Stk. No.	Per Set
CHEVROLET 6 37-53 All 54-61 exc. Corvair	500A	$4.39	501A	$2.67
CHEVROLET V8 55-59 exc. 348 eng.	500C	9.38	501C	5.98
60-61 exc. 348 eng.	500D	10.50		
58-60 348 eng.	500E	10.50	501D	5.50
DODGE 6 35-61 All	500A	4.39	501A	2.67
FORD 6 52-59 All	500A	4.39	501A	2.67
FORD V8 52-58 All	500F	6.50	501E	3.71
59-61 All	500G	6.75	501F	3.71
EDSEL 58-60 Inter. eng.	500H	9.50	501G	5.98
OLDSMOBILE V8 49-58 All	500J	10.50	501H	5.50
PLYMOUTH 6 30-61 All	500K	6.50	501I	3.71
	500A	4.39	501A	2.67

CHROME PLATED — SOLID STEEL GEAR SHIFT BALLS

- Fits floor stick and column shift arms for all cars (except Corvette).
- Fits Ford pulley of the build for that smooth comfortable "fit".
- 1½" diameter ....weighs 8 oz.
- Newest style ....most interesting round in your car that threatening round in your hand.

Gear shift balls are drilled and tunnelized (Corvette—up to fit any car (except Corvette).

No. 316 Each ....POSTPAID $1.49

The PREMIUM Safety Belt

- Standard Aircraft type Polished Buckle.
- 2 inch Nylon Webbing.
- Positive, Grip Buckle Holds Securely—Releases Quickly.
- Available in Blue, Green, Grey, Maroon, Black and White. Specify color.

No. 779—Each $4.95

METAL-TO-METAL BUCKLE SAFETY BELT

Like above safety belt, except with exclusive buckle design that insures positive instant engagement or release. Specify Blue, Green, Maroon, Black.

No. 780—Each $7.95

PLASTIC STEEL 80% STEEL—20% PLASTIC

APPLIES LIKE PUTTY—HARDENS LIKE STEEL

ADHERES TO ALL METALS AND GLASS. Can be worked like steel—saw, grind, drill, etc. Repairs breaks, cracks, holes, etc.

A new material with unlimited uses. Can be used in repairing, remodeling or customizing. Apply like putty over any flat item and allow to harden. Can be worked like steel—grind, cut, drill, tap, etc. Can also be used as a bonding agent between two metals.

Each kit contains enough material for many uses—full instructions included.

No. 910—Per Kit ....POSTPAID $2.25

Sparkling CHROME PLATED DISTRIBUTOR CAPS for All 6 & 8 Cyl. Cars

Dress Up Your Engine with These Beautiful Chrome Plated

Replace original equipment caps perfectly. Not only add beauty to your engine, it has the added advantage of superior construction as it outlasts original equipment caps. Molded of hi-dielectric, fine textured, practically non-porous bakelite, with top covered by chrome plating.

Specify Make, Year and Model of Car when ordering.

No. 724—Each ....POSTPAID $4.95

'Blue Dot' Lenses for 57-61 Chev. & 55-61 Ford

1961 FORD

1957 CHEV. 1958 CHEV. 1959 CHEV.

1958 FORD 1956 FORD 1957 FORD 60-61 CHEV.

1958 FORD 1959 FORD 1960 FORD

Ruby red lenses with a blue dot in the center that reflects a soft blue light.

Your tail lamps will have a new glow that makes your car stand out from the others. Ruby red lenses have blue dots with chrome rim surrounding it mounted in center. Easily installed—just remove old tail lamp lens, screw in the blue dot lens and you're ready to go. No cutting, no drilling or alterations required—lenses are custom fit for the following cars:

Yr.	Stk. No.	Each	Yr.	Stk. No.	Each
CHEVROLET			FORD		
1957 All	710A	3.25	1957 All	711A	3.25
1958 All	710B	3.25	1958 All	711B	3.25
1959 All	710C	3.75	1959 All	711C	3.25
L.H.	710D	3.75	1960 All	711D	3.25
60-61 All	710E	3.75	1961 All	711E	3.25
				711F	3.75
All Nos.	POSTPAID		1961 All	711G	3.25

Car Club Jackets

CHOICE OF FIVE DESIGNS

Wherever your sport is fast—sport cars, boats, ½ midgets or chaos, here is a jacket that fits your specifications. Made of nylon with a colorful, high quality coat that is carefully tailored from the finest Dan River cloth and washable poplin in popular wind-breaker styling. Has such desired features as roomy corded 4-button collar, knit cuffs and waistband, side elastic inserts—and it is treated with Dufond to resist soil and water! Fast color repellent.

This classy jacket is available in any of 5 designs. "NO CLUB—LONE WOLF" "HAVE GOODIES—WILL TRAVEL" "NIGHT DRIVING" "NIGHT PROWLERS", or "CAM BUSTERS" which are permanently silk-screened on back of jacket, and then flocked for a velvet-like effect. Each is in Red with White emblem, Blue with White emblem, or White with Black emblem. Men's sizes: Small, Medium, Large, or Extra Large. When ordering, be sure to specify jacket color, size and emblem desired.

No. 592—Each $6.95

No More "Dead" Batteries for the Life of Your Car

Just 3-oz. gives you a Lifetime car battery

VX-6 Battery Additive

- Add-on-motor starting.
- 25% stronger lights.
- Increased battery output.
- Life of car guarantee.

VX-6 insures constant starting under any weather conditions, anywhere in the world. Dissolves sulphation in old batteries, prevents it from forming for the life of your car in both old and new batteries. Best-selling battery additive on the American market.

No. 887—Each. POSTPAID $2.98

REPAIR and RESTYLE with Fiberglass CUSTOMIZING KITS and ACCESSORIES

- Repair dents & holes in Metal Cars, Trucks, Boats, Furniture, Appliances, Air Scoops
- Restyling—Build Hoes & Build Hard Tops, Etc.

Do-It-Yourself Kit ....Full instruction book included with each kit. No welding, no molds, no soldering, no special tools needed. Fiberglass is acid-proof, waterproof, and weatherproof. Will not rust, rot, or deteriorate. Will not dent. Easily repaired if damaged. Works perfectly metal or if it doesn't please.

Kit contains 10 sq. ft. of cloth, 11-oz. resin epoxy, 2-oz. hardener, and 2 bags of filler.

No. 25—Per Kit $9.95

FIX-IT KIT — Covers 3 Square Feet. For car repairs and customizing. Also useful in home for repairing gutters, water tanks, etc. Includes 3 Sq. Ft. Pc. 9½ oz. Resin Epoxy, 1½ oz. Hardener, Bag of Floc.

No. 19—POSTPAID $3.78

FRONT SHOCK ABSORBER HELPER SPRINGS

Fit right over your present front shock absorbers for POSITIVE CONTROL of STEERING and GREATER CAR STABILITY

ELIMINATES bottoming, front end drive, sag and sway.

IMPROVES ride comfort, safety and cornering.

INCREASES the life of the tires ....keeps front end more level and wheel alignment to original specifications.

ADDS extra strength and lift to sagging front springs.

EASY TO INSTALL, no special tools needed. For the front of the following cars, equipped with coil shock absorbers. Can also be installed over replacement type shock absorbers. Aid in years, has no metal, nothing else to buy.

57 Buick	55-56 Dodge	55-56 Plym.
59-61 Buick	58-60 Edsel	49-61 Ford
60-61 Buick (exc. Mod. 75)	59-60 Studeb. (exc. T-Hawk)	For the Following Cars Only:
49-53 Cad.	54-56 Lincoln	49-61 Ford
53-58 Corv'tt	49-61 Merc.	55-61 Chev.
55-58 Chev.	49-54 Nash	55-61 Pont.
55-56 DeSoto	1955 Olds.	59-61 Ford
	57-61 Olds.	½-T PU
	51-58 Packard	

No. 428 For Pair ....POSTPAID $8.50

CAR PLAQUES and Matching Jacket Emblems

Accessories — Beach Waders — Camaro — Hot Rods — Nomads — Oldsmobile 88 — Hot Heads — Hannah — Crusaders — Outlaws — Rebels — Road Runners — Vampires — Yeoman

Choice of 10 New and Different Designs. Specify Name of Plaque and Emblem.

If you are proud of your club, here are club plaques and jacket emblems that will reflect your pride. Dress up your car—dress up your jacket with these plaques and emblems. Beautiful shield design makes these car plaques and jacket emblems outstanding. Plaques are of heavy cast aluminum (9½" x 5½" wide-large size). They have raised, polished lettering design, and polished beveled edges with black background. Jacket emblems are same size and design as plaques, and are available in felt or cloth with bound edges. All emblems have 3-color (red, blue and white) design background.

Specify Plaques or Emblems when ordering.

Plaques—643—Each $2.95
Felt Emblems—No. 646—Each 1.50
Sleeve Emblems—No. 647—Each 1.50

"Gold Medallion" Emblem FRONT & REAR FLOOR MATS

For Front & Rear All 57-61 Cars

EXTRA THICK — CHOICE OF 8 COLORS

New, Extra Beautiful Rubber Floor Mats—make any car interior "look like a million". Have the Brilliant Colors Plus Luxurious Appeal of Gold Mylar Medallion Insert (gold foil under plastic—can never tarnish—always retains it's shine and mint look). Mats a real standout! A New Floor Mat that does more for the car interior than any original equipment mat! Look at all the superior features:

- Famous Gold Medallion Insert
- Skid-Proof Back
- Door-to-Door Coverage
- Insert Fits Design
- Reinforced Heel Pad
- Perfect to Close
- Thick, Heavy-Duty, Live Rubber
- Beautiful Two-Tone Pile
- Tarnish-Proof 2" Diameter Gold Mylar Medallion.
- Choice of Eight New Luxurious Colors
- New Rib Design Catches Dirt and Water, Keeps Expensive Floor Mats Clean and Beautiful Looking Like Badcross Costly Replacements.

Choice of White, Black, Red, Green, Blue, Turquoise, Grey or Cordovan. State Color Desired For All 57-61 Cars. Specify Make Year and Model of Car When Ordering.

No. 388—FRONT, Each		$8.50
No. 389—REAR MATCHING MAT, Each		5.50

TRUNK WEATHERSTRIP

FITS ALL TRUNKS—ALL CARS

Seals out rain, moisture and dust. Keeps trunk interiors dry and clean. Stops vibration and rattle of trunk lid. Easy to install.

Specially molded sponge rubber—provides the perfect seal between body and trunk lid. 12½ ft. length (enough for any trunk) plus tube of special cement.

No. 726—Each ....POSTPAID $4.00

Quick Change Helper Spring

220 lb. 270 lb.

For All Cars With Leaf Type Rear Springs.

Easily and quickly installed or removed. An easy way changing a tire.

- EXTRA BUOYANCY — Soft, action increases safety.

EXTRA Strength and EXTRA SAFETY — Pellet chip holds coil to heavy aluminum base. Carry heavier loads in your car. Prevents springs from sagging too low or breaking. Prevents tail-pipe and bumper from scraping when driving up or down steep incline. Prevents car from bottoming. Ideal for Vacationers, Hunting or Fishing Trips.

No. 813—Per PAIR $9.95

Cattle Caller Horn

Moos Like a COW! BELLOWS LIKE A BULL!

A new sound sensation for auto horns. Control mounted on steering column permits variation of tone from the low moo of a cow to a full bellow of a bull. Ideal for use by cattle owners and those who want a different sounding horn. Easily mounted — complete with switch. For either 6 volt or 12 volt systems.

No. 630—6 Volt. Each	$14.85
No. 638—12 Volt. Each	15.85

Dashboard Ditties Decals

Stick Shift — Engine Room — WARNING Do not open radiator cap when engine is hot — Injection Unit — PEEP HOLE — HYDROMATIC — Incinerator — HIGH BEAM TEST ONLY! — Fasten Safety Belts — No Smoking Please!

Small decals, imprinted with laugh-getting quotations, that can be placed on dashboard, windows, bumpers, etc. 4½"x12" sheet holds eleven decals of various sizes and shapes. Each of them tested for obtaining a hearty chuckle. Will not fade, chip or peel. Easily applied to any clean, smooth surface.

No. 390—Per Sheet ....POSTPAID 1.00

FENDER GUIDES for 60-61 CHEVROLET

60 CHEV. 81½" Long 31½" High

61 CHEV. 71½" Long 31½" High

driver to easily see end of car when parking. Ideal for all 60-61 Chevrolet.

- Aids in parking, making sharp turns in close quarters.

Gleaming chrome plated fender guides prevent marred or crumpled front fenders. Complete with template and hardware. Easy to install.

No. 843—For 1960 Chev. Per Pair	Ppd. $3.75
No. 845—For 1961 Chev. Per Pair	

100 Candle Power Flashing WARNING LIGHT

- 360° portable flashing light with 100 candle power bulb.
- Puts out 60 flashes per minute—can be seen up to 3 miles under ideal conditions.
- Choice of magnetic base or permanent roof mounting.

Perfect warning light for unmarked police cars, volunteer firemen, civil defense, emergency vehicles, etc. Completely self-contained—weatherproof—with clamp ring for easy replacement of bulb. Can be mounted on roof or dash of car. Precision flashing action. 6" high—available in choice of red, blue, or amber chrome plated spun steel 5" x 2" diameter. Light flashes can be seen as far as 3 miles under ideal conditions. Have 3 colored lenses: Red, Blue, or Amber. Available for 6 or 12 volt systems. Specify color and voltage desired when ordering.

This merchandise is shipped from our Illinois warehouse. Payment item must be sent in full in order to facilitate handling. Our usual 100% satisfaction or money back guarantee applies.

- Magnetic Base Warning Light. Can be mounted on any flat or slightly rounded steel location—withstands 95 MPH speeds. With cord, plug that fits into cigarette lighter socket.

No. 633—Each $14.95

Permanent Roof Mount Warning Light. Complete with easy-to-follow instructions.

No. 633—Each $14.95

Red Neoprene DELUXE SPARK PLUG CABLE SETS

FOR ALL CARS

One-Piece Molded Neoprene Spark Plug Wire Assemblies — Completely Seal Out Moisture

- Neoprene covered cables for long trouble-free service. Resists heat, oil, moisture.
- Resists oil and gas, heat and cold.
- Resistant cable has unusual eye-opener. Easier, quicker, sure starting. Instant of weathercold, cold wet or dry—with these new neoprene covered spark plug and coil cables. All spark plug wires have molded neoprene boots, spark plug terminals, molded to the cable—keeps moisture out, keeps the current in. Sets are complete for each car, containing six or eight spark plug cables, coil cable, distributor nipples and terminals. Easy to install.

	Stk. No.	Set
All 6 Cyl. (exc. Chev.)	777A	$2.75
All 6 Cyl. Chevrolet	777B	2.25
All 8 Cyl. Cars thru 1957		
Exc. Chrysler Product Cars	777C	3.25
8 Cyl. Chrysler, De Soto, Dodge and Plymouth	777D	3.25
58-61 Buick, Cad., Ford V8, Merc., Olds, Rambler V8 & Studs V8	777D	3.25
59-61 Chevrolet V8	777E	3.25

Send Your Order Now to JC WHITNEY & CO 1917-19 (0-210) Archer Ave., Chicago 16, Ill.

Buy with Confidence—Satisfaction Guaranteed or Money Back! JC WHITNEY & CO

MANUAL TRUNK KIT

Streamlines rear deck. Remove present handle, operate from inside of car. Complete with instructions and diagrams. Easy to install. No. 284—fits Ford 36-60, Merc. 39-60, all G.M. 49-60 exc. 49 Olds 59, 54-59 Chrys., DeSoto, Dodge; 53-59 Plymouth.

State Year, Make and Model. POSTPAID. Per Kit $1.49

Engine Swapping Handbook

Here is a "how-to-do-it" book about engine swapping. Covers late model OHV engines with step-by-step method of installing into older cars and compacts. Includes information on installing Cadillac into Ford, Chevrolet into Ford, Chrysler into Ford, and Chevrolet into Studebaker, plus late Chevrolet into early Chevrolet, and others. Lists all electrical circuit changes, information on adapters, engine weights, suspension and chassis data. Its 106 pages include lots of charts. Edited and published by Floyd Clymer.

No. 268—Each $2.00

POSTPAID

FLAMING EYEBALL DECALS

Attention-getting, colorful decals that lend an unusual effect to any car. Feature two flaming blood-shot eyes in red, yellow, black and orange. Easily applied to any clean, smooth surface—can be placed on hood, trunk, fend ers, dash, doors, or any other spot on car. Can be used to create many different effects. Will not fade, chip or peel. Each sheet 9"x12".

No. 283—Per Sheet Postpaid $1.50

MELLOW TONE Fiber Glass Packed MUFFLERS

Custom designed and engineered to fit each make and model of car—no alterations necessary. Increases horsepower, increases gas mileage, straight-thru construction, no back pressure, no high pitch irritating noises, deep powerful non-offensive tones. Be sure to Specify Make of Car, Exact Year & Model, Type of Transmission, Single or Dual Exhaust.

No. 37—Each $4.95

Hood UND'R-QUILT

One Number Fits All Model Cars and Trucks

Quiets Motor Noise—Made of Fiber Glass! A super tone insulation that is Fireproof, Waterrepellent and everlasting. Protects against heat and cold. Easily installed by anyone in 10 minutes. Adhesive and instructions enclosed. Und'R Quilt is standard equipment on all fine cars.

No. 732 —Each $1.29

No. 733 —Deluxe type. Same quality as above. 1 inch thick. each $1.95

BOOKS THAT TELL AND SHOW YOU HOW—

To Fix: Your Ford—Your Chevrolet—Your Plymouth—

FIX YOUR CHEVROLET HAND BOOK For all models, 1940 thru 1961. 256 pages of instructions and illustrations.

No. 120—Each POSTPAID $2.95

FIX YOUR PLYMOUTH HAND BOOK For all models, 1946 thru 1961. 240 pages of instructions and illustrations.

No. 118—Each. POSTPAID $2.95

FIX YOUR FORD HAND BOOK For all models, 1946 thru 1961. 248 pages of instructions and illustrations.

No. 119—Each. POSTPAID $2.95

Ford Model "A" Service Manual All repair information on model A's

No. 276—Each—POSTPAID $1.00

"Stop Car Thieves" with this Auto Burglar Alarm

Let this private police-man protect your car 24 hours a day. Completely automatic — blows horn intermittently the instant anyone touches any part of the car—and continues to blow it for approximately 15 seconds, after car is left unmolested. Simply a unit that attaches to dash upon leaving car. Upon contact, alarm starts blowing. Wiring complete instructions for simple, quick installation.

No. 17— POSTPAID—Each $2.50

FENDER WELL SKIRTS

CUSTOM FIT FOR ALL CARS

REG. $12.95—SAVE 25%—BUY NOW!

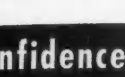
- Fits inside and recesses flush with Fende...
- Fits in the Fender Like Original Equipment
- Positive Locking Levers—Won't Rattle or Fall Off.
- Heavy Gauge Steel—Prime Finish—Ready to Install
- EASY TO INSTALL.

54-61 Buick	60-61 Falcon	53-61 Plym.	
55-61 Chev.	52-61 Ford	53-61 Pont.	
60-61 Corvair	1961 Lancer	52-55 Rambler	
60-61 Comet	52-56 Merc.	60-61 Rambler	
57-61 Chrys. & De Soto	59-61 Merc. 49-56 Mob.	59-61 Stude.	
53-55 Dodge	54-61 Olds.	60-61 Valiant	

When ordering, specify make, year, and model of car.

No. 307—Per Pair $9.95

AUTOMATIC LIGHT FOR TRUNK OR UNDER HOOD FOR ALL CARS—6 & 12 VOLT



- Lights up trunk or engine compartment automatically when hood or deck lid is raised.
- Equipped with mercury switch.
- Simple, easy installation — complete with wire, instructions.

No. 1416—6 Volt Each POSTPAID $1.59
No. 1418—12 Volt

HOT-ROD PRIMER

Gives a smooth satin finish. Can be used as a primer or as a smooth finish coat in itself. Quick-drying. Will not run. In three colors, gray, jet black and white. POSTPAID

Grey		Jet Black	
Stk. No.	Each	Stk. No.	Each
542A —½ Pt.	1.00	544A —½ Pt.	1.00
542B —Qt.	1.50	544B —Qt.	1.50
542C —Gl.	2.25	544C —Gl.	3.50

549 — Grey 17 Oz. Spray Can $1.75

SPECIAL PURCHASE BRAND NEW 14" Steel Wheels for 57-61 CHEV. & FORD

only $7.95 ea.

- Replace bent, rusted wheels for safer driving, increased tire life.
- Buy extra wheels for mud and snow tires — have tires put on and bead ready for use.
- Buy now and save on these unbeatable low prices!

FOR THE FOLLOWING CARS:
57-61 Chev. with 7.50x14 tires. No. 616—$7.95
57-60 Ford with 7.50x14 tires. No. 615—7.95
1961 Ford with 7.50x14 tires. No. 616— 7.95

Kandy Kolor GEAR SHIFT BALLS

CHOICE OF 6 BEAUTIFUL COLORS

1½" DIAM. 2" DIAM.
Two extra-large sizes—1½" or 2" diameters
Choose from 6 new eye-catching colors.

New oversize gearshift balls of polished bakelite in striking looking Kandy Kolors—the latest trend in customizing car interiors. Extremely practical, too—for the palms of the hand perfectly for smooth, comfortable gripping. Each size has 5/16" threaded brass insert—will fit any car. Available in the following brilliant colors:

Color	1½" Dia. No.	Each	2" Dia. No.	Each
Kandy Apple Red	139A	140A		
Kandy Blue	139B	140B		
Kandy Green Mist	139C	140C		
Kandy Pagan Gold	139D	140D		
Kandy Burgundy	139E	140E		
Kandy Lime Ice	139F	140F		

POSTPAID $2.00

DUMMY TEAR DROP SPOTLIGHTS

The latest in customizing — a spotlight ornament.

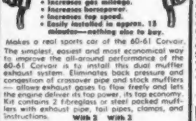
Looks like a genuine tear drop spotlight. Triple plated stainless chrome finished for sparkling eye-dazzling beauty.

Easily Installed On Any Car

True-to-life dummy spotlights, beautifully shaped with classic streamlining for realism. Fully adjustable, move up, down, left or right—look and move like the real thing. They're the last word in customizing to give the appearance of a genuine tear drop spotlight without the expensive, troublesome installation of a regular spotlight. Complete with 5" lens, left and right mounting brackets. Require only 2¼" hole to install.

No. 309—Per Pair $18.95

DUAL MUFFLER SYSTEM for 60-61 CORVAIR



Complete with 2 Fiberglass or Steel Packed Mufflers.

- Reduces back pressure.
- Increases gas mileage.
- Increases horsepower.
- Increases top speed.
- Easily installed in approx. 15 minutes—nothing to cut or bore.

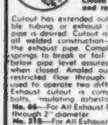
Makes a real sports car of the 60-61 Corvair. The simplest, easiest and most economical way to improve the all-around performance of the 60-61 Corvair is to install this dual muffler exhaust system. Eliminates back pressure and congestion of crossover pipe and stock mufflers — allows exhaust gases to flow freely and lets the engine deliver its top power, its top economy. Kit contains 2 fiberglass or steel packed mufflers with exhaust pipe, tail pipes, clamps, and instructions.

For Models	With 2 Steel Glass Packed Mufflers	With 2 Packed Mufflers
60-61 Corv. Sed. 1961 Corv. Lux. 1961 Corvair Pick-Up, Greenbrier & Corvan	687 A 688 A 687C	688 A 688 B 688 C

Per Kit $14.95

EXHAUST CUTOUTS For All Cars & Trucks

With Center Exit



With Center Exit

Fits All Exhaust Pipes to 2½" Diameter. Permits exhaust gases at times to be controlled from dash. Gives you two separate systems in one WIDE OPEN EXHAUST system for maximum speed and economy when you want it.

- INCREASED HORSEPOWER
- INCREASED GAS MILEAGE
- FASTER ACCELERATION
- IMPROVED PERFORMANCE
- HIGHER TOP SPEEDS
- REDUCED ENGINE HEAT

Ground joint exhaust for city and restricted areas.

Cutout has extended outlet for use with flexible tubing or exhaust pipe, where auxiliary pipe is desired. Cutout is of heavy gauge steel all welded construction—actually strengthens the exhaust pipe. Completely mechanized—no springs to break or fail. New deep valve seat below pipe level assures tight leakproof seal when closed. Angled outlet permits free unrestricted flow through outlet. Can also be used to connect two different tuned mufflers. Exhaust cutout is complete with mounting bolts, insulating asbestos, and dash control.

No. 66—For All Exhaust Pipes through 2" diameter
No. 210—For All Exhaust Pipes 2½" thru 2½" diam

POSTPAID EACH $2.95

Hollywood WOLF WHISTLE

Precision Made Intake Manifold Whistle That Gives the Wolf Call Effect—a Startling Thing to ... and Other Effects! Produce all kinds of sounds with this reliable signal ... distinctive, unusual, attracts attention. Easily installed on cars—also ideal for trucks, motorcycles, motor boats, and outboard motors. Fits any intake manifold. Mounts on quality made with gray hammertold finish, complete with wire cable installation instructions included. Takes only minutes.

No. 61—POSTPAID, Each $2.95

Color Dye for Lamp Bulbs

Customize Your Car With Colored Instrument Lights.

This is a permanent transparent dye that will adhere to lamp bulbs. Not a cellophane coating—fits on dome lights, dome lights, safety lanterns and radio panel lights. Simple to use —applicator furnished—one bottle will color several bulbs. Available in RED, GREEN, BLUE and VIOLET. State color wanted when ordering.

No. 748— Each. $1.00

Ammeter & Oil Gauge Kit FOR ALL CARS WITH RED WARNING LIGHT

All cars with warning lights for Oil and Battery need these gauges. Air gap gauge for meter tells Rate of current flow. Oil pressure gauge tells Exact oil pressure.

A much needed addition to the warning lights provided on many cars. Warning lights indicate whether or not something is working, but when oil pressure falls below 15 lbs., rather than the rate of charge or discharge and exact oil pressure. These calibrated gauges show exact condition so that any fault can be remedied at once. Consists of 60-0-60 Ammeter 2½" diameter and 80 lbs., oil pressure gauge 2½" diameter in Twin Gauge Panel for over-dash mounting. Easy to follow hook-up and installation instructions comes with each unit. Fittings included.

No. 27 —Kit $4.95

TRUNK TOOL HOLDER

FITS ALL TIRES!

Fits over the spare tire in trunk. Simple to install. Convenients for storing tools, shoes, flashlight and other car needs. Eliminates trunk rattle. Made of durable synthetic rubber, sewed with nylon thread.

No. 721—Each—POSTPAID $1.98

Tele-Phony Suction Cup ANTENNA

For roof or trunk mounting. Looks exactly like a genuine phone type antenna. Gives your car the appearance of having a phone in it.

Here's a real dress up item—a dummy antenna with all the features of the real thing. Has stainless steel mast and flexible spring base with suction cup mounting. Easily installed—no holes to drill—no bolts or screws needed. 12" long.

No. 678 —Each POSTPAID $1.00

MINI Super CHARGER

For Single, Double & 4 Throat Carburetors

Double Throat Carb. Single Throat Carb.

- 20% More Gas Mileage by Actual Test.
- Exact Horsepower & Perfect Acceleration.
- Increases All-Fuel Charge Efficiency.
- Greatly Improved Motor Performance.

MINIsuperCharger consists of a revolving impeller "blower" & automatic air "breather" valve which misses an increased volume of air to the fuel charge with whirlwind force. The improved mixture enters the cylinders in a more powerful explosive state—and also eliminates over-rich mixtures & fuel waste. Better cleaner combustion, reduced "ping", less oil dilution, less valve, troubles and longer engine life. Eliminates any "Vapor lock". Easily installed. Satisfaction Guaranteed.

Specify year, make, model of car or truck and make of model of carburetor.

No. 311—Single throat Carb. Postpaid $ 9.98
No. 312—Double throat Carb. Postpaid 11.95
No. 313—Four throat Carb. Postpaid 13.95

EXHAUST CUT-OUT

CAST IRON

For All Cars with Exhaust Pipes 1¼" to 2½"

Exhaust tone is controlled from the dash. Can be used as a cut-out in the country and closed in restricted areas. Can also be used to operate two different toned mufflers. Studs over nuts construction. Easily installed.

No. 613—Each $3.75

AUTO FABRIC SPRAY

CHOICE OF 12 BEAUTIFUL COLORS & CLEAR

Enjoy a new looking car interior. Brightens and freshens faded and soiled fabrics. 12-oz. pressurized can — holds enough for use on headliner, door paneling and floor covering. Does not rub or fade off. Use to tint-tone upholstery. Choice of red, rust, brown, tan, blue, dark or light green, dark or light gray, yellow maroon, rose, gold, silver, turquoise, black, or white as well as clear.

Specify color when ordering.

No. 54—Per Can. POSTPAID $2.95

BULL NOSE ORNAMENT

For Customizing Ford, Merc., Chev., Pont. & Plym.

Specify Car & Year when ordering

Replaces factory hood ornament. Blends per fects with moulding. For the following cars:

47-54 Ford
1951 Ford
51-53 Dodge
47-54 Chevrolet
47-51 Mercury
47-54 Plymouth
50-51 Pontiac

No. 47—Each POSTPAID $2.49

"DING-DONG" BELL from BERMUDA

From the romantic island of Bermuda comes an inspiration for the Bermuda "Ding Dong" Bell, bringing with it all the charm and color of the old world. Rust Proof and polished to a glistening finish — engineered for tone and resonance — pleasant to hear. 5½" diameter Easily installed on any car.

No. 48 each POSTPAID $5.00

CHROME PLATED CLAMP-ON Battery Terminals

- Add a touch of beauty to any car.
- Fit on any battery terminal.
- Insure perfect battery cable connection . . . help keep the top of battery looking clean and better.
- Easy to install . . . clamps on battery cables.

No. 436 —Per Pair. POSTPAID, $2.00

NEWEST CUSTOMIZING CRAZE! POM POMS

Here is the latest thing for giving your car interior a "glamour" look. Just tack these fluffy red or white pom poms above your rear window, above the windshield, around the side windows—even around upholstery, seat backs, etc. Perfect for customizing, these pom poms are attached to a ½" wide tape, which is secured to roof liner or upholstery by plastic-headed corkscrew pins included. Kit includes 6-ft of pom pom trim, which can be installed in seconds. Choice of 2 colors.

No. 393 A— Red. Per Kit
No. 393 B— White. Per Kit $1.50

Change Any Black Tire to Rubber WHITESIDEWALLS

NOW ONLY $1.98 Set of 4

FITS ALL TIRES ON ALL CARS

Not painted on, not cemented on, but a Permanent White Rubber Disc with molded lip that fits between bead of tire and wheel rim. Hugs the tire wall and stays put under all weather conditions. Has the appearance of regular whitewall tires. Can be removed and re-used on different tires. Fits all cars—tubeless or tube tires. Sold in sets of 4.

No. 787—For 12"
No. 786—For 13"
No. 785—For 14"
No. 783—For 15" Per Set $1.98

FUZZY CAR MUFFS for Mirror, Visor or Horn Ring

- Soft, fuzzy white angora-type fur muffs—add distinctive touches to the interior of your car.
- Elastic insert for easy attaching, easy removal—hold muffs securely.
- Newest countrywide rage.

No. 662—Mirror Muff. Each POSTPAID $1.00
No. 37—Visor or Horn Ring Muff. $1.29

PIN STRIPING

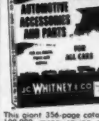
The Newest and Latest Custom Design Choice of White, Gold, Black, or Red

Ready made original design striping, easily applied in minutes. Can be applied on any clean, dry surface of car, truck or fade. Kit contains fifteen decals in nine different designs up to 6½".

Will stripe an entire car: fenders, trunk lid, hood, skirts and other parts. Specify color when ordering. White, Gold, Black, Red.

No. 335—POSTPAID Per Kit $1.00

FREE! NEW 356 PAGE CATALOG—JAM-PACKED WITH VALUES



AUTOMOTIVE ACCESSORIES AND PARTS

NEW LOW PRICES

THOUSANDS OF NEW ITEMS

This giant 356-page catalog, packed with over 100,000 money-saving automotive items for every car or truck . . . is yours FREE with any order for items selected from this advertisement. If you just want the catalog, send only 25¢ to cover part of handling and mailing cost (refunded on your next $5.00 order).

SPECIAL D-PAGE MODEL "A" FORD PARTS & ACCESSORIES BOOK. Everything for 28-31 Model "A" Fords. Send only 10¢ to cover part of handling and mailing cost (refunded on first $5.00 order).

HERE ARE THE FACTS ON THE WORLD'S FASTEST FLOOR SHIFT CONVERSION KITS

Now . . . install the world's fastest floor shift conversion kit—not at $49.95—not at $39.95 —not at $29.95—but at a price that can't be duplicated anywhere . . . just $19.95 for the complete kit.

This new Straight-H Speed Shift Conversion has been precision engineered for positive, instant-action shifting. Designed by speed experts, this advanced straight-line pattern permits lightning-fast movement thru the gears without the expensive, troublesome action of a regular stickshift. Complete with 5" arm, left and right mounting brackets. Require only 2¼" hole to install.

No. 309—Per Pair $18.95

STRAIGHT LINE LIGHTNING-FAST Floor Shift CONVERSION KITS

STRAIGHT-LINE "TRIGGER-ACTION" DESIGN INSURES POSITIVE, CAN'T-MISS - A - GEAR, LIGHTNING - FAST SHIFTING!

FOR ALL CARS with Standard or Overdrive Transmissions $19.95

LOW: Pull back as with regular shift.
2ND: Straight forward.
HIGH: Straight ahead.
REVERSE: Push hard left & forward

New advanced straight-line pattern permits lightning-fast movement thru the gears.

CONVERTS CUMBERSOME SHIFT LINKAGE MISSION TO FLOOR SHIFT.

Will outlast and outperform shifting mechanism costing twice as much. Specially designed for speed and ease of shifting gears.

Lightning "Trigger-Action" — Actually shifts faster than you can move your hand. Perfect for boat for competition. Chops off valuable E.T. seconds.

Rugged Steel Plate Construction — Built for toughest use on street or drag strip. Fully 50% stronger than competitive models.

Hardened for Lifetime Service — All critical points are hardened for extra resistance to friction against wear.

Fully Guaranteed — Each unit is custom built for perfect fit and is fully guaranteed against defects in workmanship or materials.

Simple, Easy Installation — Instructions are included. Kit is complete (less shifting lever, knob and boot)—these items can be ordered separately, see listing below.

Year	Stk. No.
CADILLAC-LA SALLE	
38-53 Std. Tr.	397
CHEVROLET Pass Car	
49-54 Std. Tr. w/o OD	598
55-61 Std. Tr. w/o OD	599
w/OD	600
CHEVROLET TRUCKS	
55-61 Pick-Up	601
CHRYSLER-DE SOTO	
57-61 Std. Tr., w/or w/o OD	602
—Straight	$2.75
—Curved	$2.75
Plain Metal Shift Levers	—POSTPAID
No. 623 A	—Straight. Each $1.50
No. 623 B	—Curved Each 1.50

Year	Stk. No.
DODGE	
57-61 Std. Tr., w/or w/o OD, exc. Lancer	602
FALCON	602
60-61 Std. Tr.	602
FORD PASS. CARS	
40-48 Std. Tr.	604
49-61 Std. Tr. w/OD.	605
w/o OD.	606
56-61 HD Intr. Tr., w/or w/o OD	607
FORD TRUCKS	
54-60 ½ Ton	607
F'ton	607

Year	Stk. No.
HUDSON	
50-54 Std. Tr. w/or w/o OD	601
PACKARD	
48-56 Std. Tr., w/or w/o OD	601
LINCOLN	
40-61 Std. Tr. w/or w/o OD	607
MERCURY	
40-48 Std. Tr.	606
49-51 Std. Tr. w/Air Circ. Bell Hsg., w/or w/o OD	607
51-61 Std. Tr. w/o OD, exc. 51 w/Lge Circ. Bell Hsg.	607
51-61 Std. Tr. w/OD	606
57-61 HD Trans. w/or w/o OD	607
NASH	607
49-61 Std. Tr., w/or w/o OD	609
WILLYS	
51-53 Std. Tr., w/or w/o OD	691

Year	Stk. No.
OLDSMOBILE	
49-50 Std. Tr.	597
PACKARD	
48-56 Std. Tr., w/or w/o OD	601
PLYMOUTH	
57-61 Std. Tr., w/or w/o OD	603
PONTIAC	
55-61 Std. Tr. w/OD	599
w/o OD	600
58-61 HD Trans. 9-bolt side cover	603
RAMBLER	
All Std. Tr. w/or w/o OD	601
STUDEBAKER	
49-61 Std. Tr., w/or w/o OD	609
WILLYS	
51-53 Std. Tr., w/or w/o OD	691

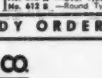
Specify car, year, model, type of transmission and stk. no. Per Kit $19.95

FOR CARS NOT LISTED ABOVE

For all cars not listed above—Universal model adapts to almost every 2-lever standard transmission with or without Overdrive. Shift Conversion Kit comes ready to install. Fits some cases a small amount of alteration (Drilling or Filing) on mounting bracket may be necessary.

No. 601—Per Kit $19.95

SHIFT LEVERS, KNOBS, AND FLOOR BOOTS FOR ABOVE CONVERSION KIT



Triple Chrome Plated Shift Levers. Improve appearance and ease of shift on all stick shifts. Solid steel with threaded stud — chrome plated — unbreakable. Full ½" diameter, 12" long. Includes hex nut and lock washer. Curved handle lever can be cut to length desired. Fit all popular floor shifts. In two styles. POSTPAID

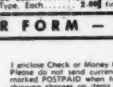
No. 619 A —Straight $2.75
No. 619 B —Curved $2.75

Plain Metal Shift Levers. —POSTPAID
No. 623 A —Straight. Each $1.50
No. 623 B —Curved Each 1.50

Solid Bakelite Shift Knobs. New handsome oversize solid bakelite shift knobs—full 1¾" diameter—fit the palm of the hand perfectly for better shifting. Beautifully polished heavy solid bakelite—won't discolor or wear. Drilled and tapped. With universal adapter to fit all shift levers. Perfect for all cars, hot rods, sports cars, customs and compacts. POSTPAID

No. 611 A —Red $1.00 No. 611 B —Blk. $1.00

Beautifully Chrome Plated Steel Shift Knob. No. 624 —Each —Postpaid $4.25



Black Rubber Floor Boots. Heavy duty sports-car style black rubber boots with large metal eyelets and lacing thongs. Fits over floor-board and shift unit. Prevents dust and dirt from getting into shifting mechanism, causing uncomfortably hot, sticky shifting. Flexible bellows adjusts to any angle to fit flat or sloping floorboards. Two sizes to fit all floor shifts. POSTPAID

No. 612 A —Oval Type Each $3.00
No. 612 B —Round Type. Each 3.00

"LUCKY" Gear Shift KNOBS

Fit ALL gear shift levers

New, novel gear shift knobs—be the first to have them on your car. Made in 1 inch diameter—all black with figure 8 on white background. Lucky dice in 1½" square—white with black dots. Made of composition plastic. Postpaid

No. 438 —Dice knob each 1.50
No. 439 —8 Ball knob each 1.50

FRONT or REAR END LOWERING KITS

For All Cars With Front or Rear Coil Springs

For Use on All Coil Springs With or Without Shock Absorbers in the Car.

- Easy, quick way to lower front or rear ends. Installs in approximately 2" to 3" drop.
- Gives a car that low-slung look.
- Reduces center of gravity—reduces wind resistance for added safety.
- Easily installed—no need to remove "A" frame or springs.
- No cutting, drilling or welding necessary.

Kits are complete with all necessary parts to lower both front or rear coil springs and full instructions.

No. 82 —Per Kit $4.95

USE THIS HANDY ORDER FORM — MAIL TODAY!

JC WHITNEY & CO

1917 (0210) Archer Ave., Chicago 16, Ill.

I enclose Check or Money Order $_____ to cover payment in full. Please do not send currency or stamps. We pay postage on items marked POSTPAID when full payment accompanies order. You pay shipping charges on items not marked POSTPAID. Minimum C.O.D. order accepted must be $3.00 or more—enclose at least 25% deposit, pay balance plus all shipping charges upon delivery. Orders accepted from residents of United States and its territories and possessions only.

Name_____

STATE—My car is a_____ Year_____ Model_____ No. of Cyl.____

Address_____

City_____ Zone_____ State_____

☐ Catalog sent Free with your order. Check here if you want Catalog only—Send 25c.

Ship following order on money-refund guarantee of satisfaction:	Quantity	Stock No.	Description	Price

JC WHITNEY & CO 1917 Archer Ave., Chicago 16, Ill. USE HANDY ORDER BLANK

THE FAMILIAR VOLKSWAGEN, AT LEFT, WHICH WILL BE CONTINUED, IS SHOWN WITH THE ALL-NEW VW 1500 IN THIS COMPARISON VIEW.

Official Debut of the VW-1500

by Jim Miller

THIS MONTH in Europe a new car will be publicly introduced bearing a name that is now as well known and as important here as any produced in Detroit. The name is Volkswagen and the car is the all-new VW 1500.

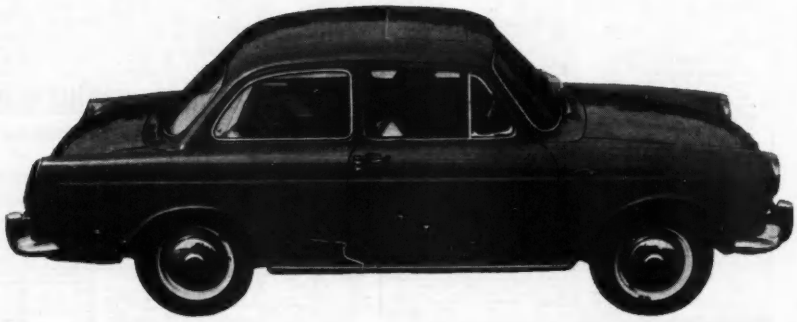
The VW 1500 will be sold in every country of the world where Volkswagens are sold, except the United States. That is the status of the car, at least for the present, as far as American car buyers are concerned. During the current year, about 250,000 of the existing versions of Volkswagens will be sold in the U.S. The total far exceeds the number of models built annually by a majority of the domestic makes.

The new car is not the Volkswagen 1500 — its official name is the VW 1500. When it will become available on the U.S. market is pure conjecture, but it is probable that the time is not far off. Some experienced observers predict not more than a year or two, at the most.

Although the car is a new design, it follows very closely established Volkswagen practices. It has, to begin with, the very same standards of high quality of materials and assembly that have made the older version such a fantastic success.

The basic components also are virtually identical to the earlier models, although there have been a number of significant changes in arrangement and in details. It has the unit body, torsion bar springing, the rear-located air-cooled engine of four cylinders in the pancake layout. Since the original Volkswagen is familiar, the new car is best described by comparison.

The body is just over six inches longer, 166.3 inches as compared with 160 of the present car. Width is 63.2 inches, about two inches more. Height is one inch lower, down to 58.1 inches. Ground clearance and the front tread are the same.



From the side the VW 1500 looks much longer than the standard Volkswagen, yet the length has been increased by only six inches. The wheelbase is same.

The wheelbase also is identical, 94.5 inches. So the car, overall, is a little longer and wider, but otherwise approximately the same dimensions as the original VW.

There are more differences in the engine. It is a bigger unit in displacement and output. The new car has 91 cubic inches, or about 18 more than the smaller car. Rated output is 53 hp at 4,000 rpm, compared with 40 at 3900. Compression is up from 7-to-1 to 7.2-to-1.

Transmission is a four-forward-speed box with ratios precisely the same as the original Volkswagen. The weight of the car is up substantially, however, by about 270 pounds.

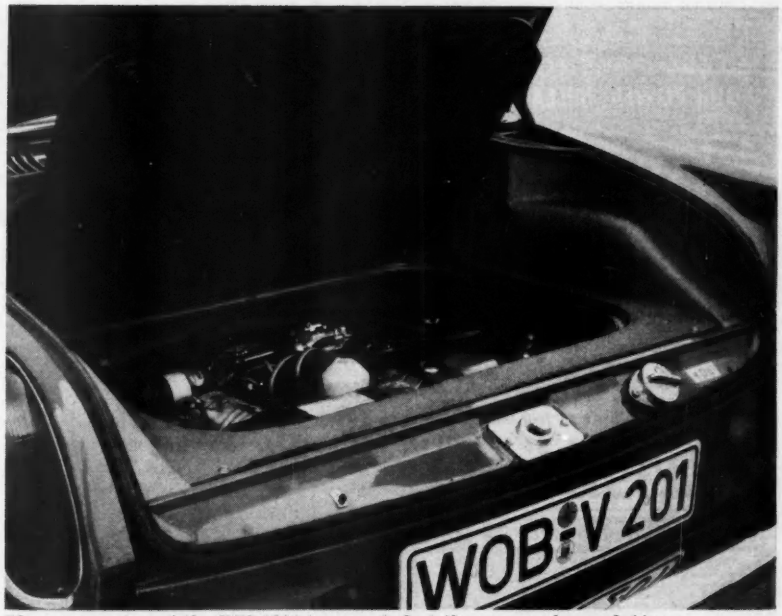
What all this does is change the performance characteristics of the VW 1500 substantially from what Volkswagen drivers have experienced so far. In brief, it corrects some of the defects of the vehicle. The fuel economy, according to best estimates, will remain about the same, somewhere between 25 and 30 mpg. But the accelerating ability of the car is greatly improved and its 0-60-mph time should now be close to 20 seconds. A definite improvement over the original car, which had a tendency to be slow in traffic and could boast of a 0-60 time of only 22 seconds.

The new VW 1500 also should remedy several limitations in the Volkswagen's comfort and capacity. It is an easier car to get in and out of, there are 5½ inches more hip room in the front seats and two inches more in the rear.

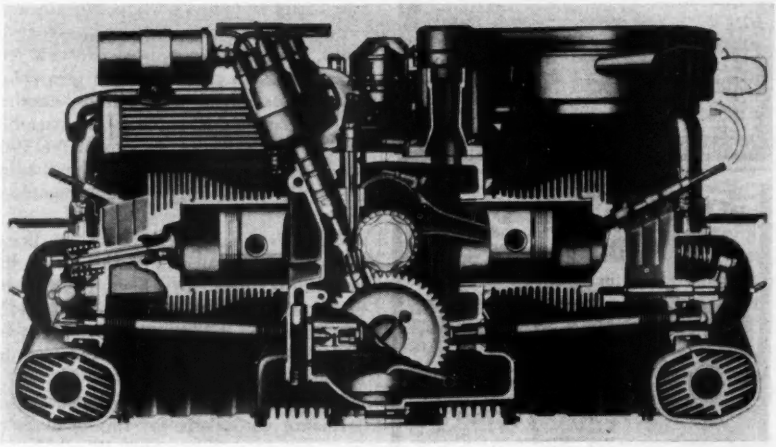
Although the car has not yet been available for full road testing by non-factory personnel, those who have had brief opportunities to drive it report the general handling characteristics and the maneuverability are good — about the same as the familiar standard VW. The turning circle of the VW 1500 is 32 feet.

The rear-engine location has been so contrived that the car does have rear trunk space of surprising proportions. This area, coupled with the forward trunk, does give it very good luggage capacity for so small a vehicle.

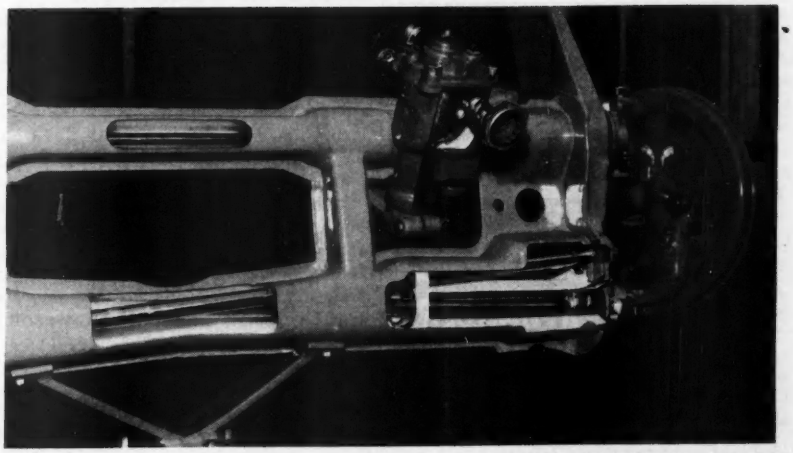
The VW 1500 will be priced in Germany at close to $1625. For comparison purposes, the original Volkswagen design, which is listed in the United States at $1665 p.o.e., can be purchased in Germany for less than $1,000. Any Volkswagen imported into the U.S., however, must have more than $100 in extra lighting and other safety equipment to meet existing regulations. So a good guess at the price of the VW 1500 in the States, when it arrives, is in excess of $2,000. And at that level it'll have stronger competition than it ever knew before. /MT



The new engine of the VW 1500 is mounted at the rear under a platform inside the trunk which lifts for access — an arrangement something like the one used on the compact Corvair station wagon.



The layout of the new engine is very similar to the one used in the original Volkswagen. It is, however, a much bigger engine in both cubic inches and horsepower output, and should improve acceleration.



Torsion bars are still used for springing in the VW 1500 suspension system. Note how bars are crossed.

FREE CATALOG
60,000 ITEMS TO STEP UP YOUR POWER, MILEAGE, STYLE!
SAVE UP TO ½ ON FAMOUS BRANDS!
Buy on Easy, No Interest TIME PAYMENTS!
Latest Road Car, Custom, Rod, Drag and Racing Parts — Superchargers, Injectors, Cams, Manifolds, Exhausts, Ignitions, Swapping Kits, Chrome Accessories, etc. ALL FAMOUS BRANDS plus new items available only from Almquist. Send 25c for mailing — refunded in full on first order.
DEALERS — Write on your billhead.
ALMQUIST DEPT. MTC-10 ENGINEERING CO. MILFORD, PA.

ELECTRIC WELD · BRAZE & CUT
REPAIR MOST EVERYTHING MADE OF METAL
Arc Welder
Home appliances, Auto parts, Farm-garden equipment, toys. Make and repair playground equipment, lawn chairs, tables, ornamental iron work, gates, wagons, etc. Solder, heat, bend and straighten with terrific heat from arc torch. Cut and weld up to ¼" steel plate. A million uses for Home, auto, farm, inventors, factories, etc. Works from any home 110 volt plug-in. Complete with dark welders mask, arc torch, supply of welding and brazing rods. Solder, flux, and complete Welding Instruction Book. Attractive — portable — efficient 1 yr. guarantee. Wt. 4 lbs.
SEND ONLY $3.00 (cash, ck., mo) and pay postman $11.95 plus C.O.D. ptg. on arrival or send $14.95 for P. Paid Delivery. Ideal gift for mechanically minded home owners, relatives, friends.
Order now for early delivery. Available only from:
MIDWAY WELDER Dept DMT-10 Kearney, Neb.

NEW!
First Miniaturized
TWO-WAY RADIO!
$29.95 each postpaid with batteries
Two for $59.90
Just 9" HIGH
SPACEPHONE—FITS IN SHIRT POCKET! Two-way walkie-talkie sending and receiving set in the smallest case of the lowest price! Absolutely self-contained: microphone—loudspeaker, 9-volt transistor radio battery, transistorized transmitting and receiving sets with the latest miniaturized printed circuitry. U.S. designed and made. Volume control and tuning. Range ½ mile up.
Citizen's band—NO LICENSE, NO EXAMINATION—NO AGE LIMIT. For hunting, boating, fishing, hiking, all sporting uses, farms and ranches. Will operate between vehicles.
Electrosolids Corp. products are now in use on such projects as the Explorer VI Satellite. Spacephone replaces and does the same job as equipment costing from $114 to $300 per pair.
TO ORDER: Enclose check, cash or M.O. for postpaid shipment. $5 deposit per unit for C.O.D. 10-day unconditional money-back guar. Dealers inquire. Calif. res. add 4% state tax.
Electrosolids Corp., 13745 Saticoy Street, Panorama City 36 Calif.

GUNK removes grease like no detergent can!
Cleans power mowers, engines, garage floors, kitchen walls, ovens, exhaust ducts, paint brushes, furnace filters, bar-b-q grills, machinery! At auto supply, farm, or hardware stores!
GUNK CHICAGO CO. River Forest Ill.
RADIATOR SPECIALTY CO. Charlotte, N.C.

McCULLOCH PAXTON SUPERCHARGERS
FLASHING PERFORMANCE FOR YOUR CAR!
Write for free information
Paxton Products, 929 Olympic Blvd., Santa Monica, Cal
CORVAIR NOW AVAILABLE

RACING STOCKS

by John Lawlor

NEW AMMUNITION has appeared on the stock car firing line in recent weeks, just in time for the NHRA Nationals and other late season events. The options lists for all three of the hottest makes have been increased.

Chevy has introduced a camshaft for the 409-cubic-inch engine that provides nearly one-half-inch lift and more than 300 degrees duration, enough to increase output with the single four-barrel carburetor to 380 hp and with the dual four-barrel layout to a whopping 409 hp!

And for 409's with four-speed gearboxes, Chevy has announced two new sets of transmission ratios.

Ford has added new pistons, another camshaft and a dual valve spring assembly for 375- and 401-hp versions of the 390-cubic-inch engine. But the big news from Dearborn is the long-awaited four-speed box.

Yes, it's finally here. Built by Borg-Warner, it has much in common with the floor shifts offered by Chevy, Pontiac and Studebaker. Ratios are 2.37 in first, 1.78 in second and 1.37 in third. A T-shaped trigger on the shift lever unlocks the channel into reverse.

Ford anticipates a market beyond performance enthusiasts for this new set of cogs. In the 1962 model, it will be an RPO with all V-8 engines, not just the big hot jobs. The only limitation is that it can't be had in station wagons.

Perhaps the most interesting new goodies of all are to be found in the parts bin at — you guessed it — Pontiac. Knudsen and company have come up with a kit that turns the Pontiac V-8's 389 cubic inches into 421. To accomplish this trick, the bore is increased very slightly to 4.09 inches and the stroke to four inches even.

Other equipment for this biggest of the big Indians includes a new camshaft and a dual four-barrel carburetion setup. The factory rating is a conservative 373 hp, an understatement if ever there was one. The actual output is probably well over 400 horses.

* * *

CHEVY, FORD AND PONTIAC timed the release of their new equipment very skillfully. Most of it was slated for 1962 and, in fact, it gives us an exciting preview of things to expect next year. The factories' interest in dragging, however unofficial, is certainly becoming more intense.

By making these items available just before the new models are scheduled to be announced, the three manufacturers have made it perfectly legal to jazz up the cars they've been turning out for almost 12 months. Any 1961 Ford, for example, can be fitted with the new four-speed without losing its stock status. Had the box been held back just a few more weeks, it would've been strictly a 1962 option.

Now, competitors who've been experimenting to find the right combination all season have one more strong chance with what is, in effect, next year's equipment.

* * *

PLYMOUTH AND DODGE haven't been heard from in this last round of betting. As reported elsewhere in this issue in 1962 preview stories on the two makes, they've both dropped their 383- and 413-cubic-inch, Chrysler-based engines for the coming year. It may look like they're shying away from racing but don't count on it!

Engineers from both Plymouth and Dodge have admitted privately that the big powerplants can be dropped in their new smaller cars. And 375 to 400 hp should make the lighter 1962 versions *go!*

One problem is that Chrysler Corporation's favorite souping trick, ram induction, won't fit under the lower hoods of the new Plymouth and Dodge. That shouldn't really matter, though, since the plumber's nightmare has never been too successful in the quarter. The ram system provides dramatic performance on the highway but doesn't quite have it at the high rpm necessary to harvest trophies at the local strip.

The answer lies in more conventional techniques: hot cams, multiple carburetion and so forth. In the Chrysler line itself, the new 300-H is a case in point. It pulls 380 hp out of the 413-cubic-inch block with a special cam and dual four-barrels.

So Chrysler's two lower-priced makes may not be out of the running yet. In fact, Dodge engineers have been unpack-

LOUIS UNSER'S CHEVY MET A TOUGH NEW COMPETITOR, THE FOUR-SPEED FORD, DURING THIS YEAR'S RUNNING OF THE PIKES PEAK CLIMB.

ing a few crates from Weiand and Offenhauser lately.

* * *

CHEVY AND FORD battled it out in the stock car class at the annual running of the Pikes Peak Hill Climb over the Fourth of July. None of the other hot makes showed up.

For several years, Chevy has enjoyed the advantage on the mountain of its four-speed transmission. This time, however, Ford stirred up interest by announcing its new gearbox just before the event. A quartet of the newcomers from Dearborn were entered to do battle with three 1961 Chevies and two 1960 Fords.

Qualifying day proved a shock to Chevy enthusiasts as the four new Fords took first, second, third and fifth positions. Leading the pack was Curtis Turner, driving a Fairlane with the 375-hp engine and four-speed. The highest-scoring Chevy was piloted to fourth by 1960 winner, Louis Unser. His car had the 360-hp version of the 409 and four-speed.

On race day, Turner was first to climb. Blasting his Ford up the road, he reached the summit in 15 minutes and 8.4 seconds. As Unser brought his Chevy to the line, he knew he had his work cut out for him. But he also knew he could scramble up the side of the hill pretty quickly. When he crossed the finish line, he had taken only 15 minutes and six seconds, 2.4 seconds less than Turner, to score an exciting victory.

Turner's final position was second. Behind him in third was Bob Betts in a Chevy and fourth was taken by Danny Jones in a Ford.

* * *

A QUESTION I've heard a number of people ask was raised in a recent letter from Marvin D. Cartwright of Palm Springs, California. He writes:

"At Daytona, stock cars average better than 150 mph. Yet at Indianapolis, expensive, specially-built racing cars average less than 150 mph. Why?"

Well, to begin with, the "stock" cars that run at Daytona are expensive and specially built, too!

To be specific about the comparison, earlier this year at Daytona, Marvin Panch drove a 1960 Pontiac to a new record average speed for 500 miles of 149.6 mph. At Indianapolis, A. J. Foyt won the 500-mile race at an average of 139.13 mph.

A quick look at the layouts of the two tracks will reveal the reason for the difference. Daytona is a banked oval where a car capable of 150 mph can be driven flat out. There are no turns that have to be taken at less than maximum speed. Indianapolis, on the other hand, is almost rectangular in shape. The corners cannot be taken at anything like top speed. Indy cars can hit between 170 and 180 mph on the straights but have to drop below 140 mph on the turns.

In other words, put the stockers on the Brickyard and the Indy cars at Daytona and there'd be no question which is the faster type of car or the faster track.

* * *

MICKEY THOMPSON'S been at it again. This time he cleaned up records for the standing kilometer and standing mile in National Class B Stock and International Classes C, E and F. And, true to form, he did it all in one day, using nothing but Pontiac engines.

His speeds for Class B Stock were 81.497 mph for the kilometer and 95.571 mph for the mile, breaking the previous records of 73.15 and 84.02 mph, respectively, set by Chuck Daigh in a 1957 Ford. These are averages for the distances with a standing start, not terminal speeds.

Thompson's car was a 1961 Pontiac Catalina with optional manifold, heads, pistons, cam and crankshaft. The gearbox was a four-speed and the axle ratio a moderate 3.08. Heavy-duty chassis equipment was also fitted to the vehicle.

The international records were all set with dragsters built for the purpose. Thompson, who already holds the International Class A and Class B titles, posted speeds of 123.902 mph for the kilometer and 138.926 for the mile in Class C, 96.368 and 114.349 in Class E and 106.78 and 110.776 in Class F. To complete the alphabet from A through F, he had planned to try for International Class D but strong winds toward the close of the day made it too risky. /MT

I WANT YOU

TO HAVE HONEST NEW CATALOG

CATALOG COUPON

SEND 25¢ TO COVER MAILING AND HANDLING FOR NEW 1961 MAIL ORDER DISCOUNT CATALOG. BETTER THAN EVER. EACH CATALOG CONTAINS $1.00 FREE CERTIFICATE.

NAME.....

ADDRESS.....

CITY..... ZONE.....

STATE.....

HONEST CHARLEY SPEED SHOP
Box MT 1904
CHATTANOOGA, TENNESSEE

"WIND BLADE" Cuts Car Drafts

... stops side window drafts that hit driver and passenger right on the neck. You can quickly install. Sturdy, clear-vision Plexiglass, won't warp. Tailored for each make of '60, '61 or '62 car. *Not available for "hardtops."* "Wind Blade," delivered each @ $6.95 for compact cars; @ $7.95 for standard cars.

TO ORDER: (If pair wanted, specify and remit double the single price). *Print* name, address, make, year and model of auto. Send check or postal money order; add 4% sales tax for California delivery. No C.O.D.'s, please.

CROWN PLASTICS INC.
210 Mississippi St., San Francisco 7, Calif.

Your 4-WHEEL DRIVE with WARN® HUBS does most for you!

WARN HUBS MAKE 2 TRUCKS OUT OF 1
Models for all 4-wheel drives

†Warn Hubs on 4-wheel drives stop front end drag in 2-wheel drive so highway miles are fast, easy, quiet. They save gears, engine, tire wear and gas; give your 4-wheel drive the pep, speed, performance, handling ease of a 2-wheel drive — **and you still have regular 4-wheel drive when you want it!** Change drive automatically with Warn Lock-O-Matics; manually with Locking Hubs. See your dealer soon.

WARN MFG. CO., INC.
Riverton Box 6064-F, Seattle 88, Wash.

SELL 'N' SWAP

Requirements are: copy limit of 25 words (not including name and address); 1st come, 1st served; we reserve the right to edit where necessary; we are not responsible for accuracy of description, although we will reject any misleading statements. This service is not open to commercial advertisers. No ads will be accepted if payment is not made in advance. Only one CAR may be listed in any single Sell 'N' Swap insertion. This limitation will not apply to parts, catalogs, etc. The charge is $4 per insertion. If your car is unusual and you have a photo of it suitable for publication, you may submit it with your ad. If we decide to print it there's no cost to you for the cut, but we'll have to decide which photos to use. Sorry, no photos can be returned—Editor

SELL

'55 PACKARD Caribbean conv. in exceptional cond. thruout; 52,000 mi. Automatic trans. recently rebuilt. Royal Master tires, snow tires, 2 spares; rugged battery. Well worth $1500. Tully Nettleton, 351 Beacon St., Boston 16, Mass.

'31 CORD L-29 dual-cowl phaeton with Murphy body — only one. Packard engine. Beautiful classic. Drive anywhere. 8 x 10 pic $1;

details free. $3800 or best offer. Rev. Paul J. Basford, 504 N. 2nd, Banning, Calif. Phone VI 9-2434.

'53 THRU '56 PACKARD Caribbeans in beautiful cond. Will sell as a set, $6000, or separately. William Locke, Edgewater, Hamilton, Ind.

'49 PACKARD 4-dr. sed. Standard trans. with o.d. Orig. owner; 26,000 mi. Garaged; new cond. inside & out. Best offer. Andrew Lauda, 5-15 126th St., College Point 56, N.Y. Phone FLushing 9-7450.

CHROME WHEELS — 4 genuine General Motors 15-in. chrome spoked wheels. Exc. cond.; reasonably priced. K. Mardon, 97 Hempstead Ave., Malverne, L.I., N.Y. Phone LY 9-8288.

'29 MG Mark I Model 1880 2.5-liter 4-place tourer. Orig. thruout, with alum. body. Good cond. — no dents. Stored in Los Altos, Calif. George Ferguson, 2569 Cartwright Rd., Honolulu, Hawaii.

'53 PACKARD Caribbean. New top, ww's, all power equip't. Looks very good. Also '53 Cavalier parts car. Asking $1500 for both. Pix & data available. Ronald H. Wright, 134 Ohlson Ave., Nutley 10, N.J. Phone: Paramus, COlfax 2-6800.

'46 LINCOLN CONTINENTAL conv. in showroom cond. Orig. maroon paint; new top, tires, chrome & V-12 engine. Low mileage. $1250. Also new parts for '36 thru '48 Lincoln & Continental. Write needs. Carl Hall, 852 N. Crestway, Wichita 8, Kan.

'22 MAXWELL sed. in good running cond. 2nd owner. Can be seen Monday thru Saturday.

Walter W. Harrold, R.F.D. #1, Box 258, Marysville, Pa.

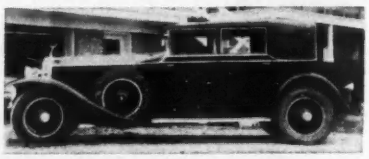
'54 PACKARD White Pacific conv. Showroom cond. — beautiful red & black leather int., good top. Power brakes, steering & aerial. 47,000 actual mi. Must sacrifice — $575. Norman Frantz Jr., R.D. #1, Lehighton, Pa. Phone DRake 7-2790.

'55 SUNBEAM Talbot Mark III-A classic Gran Turismo conv. Exceptional cond. — new top, tires, finish. 33,000 mi. $1595. Marvin Fishman, 917 Calhoun St., Fort Wayne, Ind.

'33 LINCOLN KA V-12 Murray 4-dr. sed. Exc. cond.; partly restored. All new bearings in engine. Drive anywhere. $875. Ray Ellison, 12517-D Addison Dr., Tacoma 99, Wash.

'56 PACKARD Caribbean conv. in beautiful, mint, showroom cond. Gorgeous completely reversible interior, powerful, satin-smooth 310-hp engine & auto. trans., torsion-level ride; everything powered. 30,000 actual mi. This $7300 classic car owned & driven only by Packard executive's wife. $2000 or best offer. Wallace Stanley, 7224 Old Mill Rd., Birmingham, Mich. Phone MIdwest 6-2104.

'31 ROLLS-ROYCE Phantom I S-157PR 5-pass. spt. sed., with Brewster body, left-hand drive. Complete engine o'haul, new top, 6 good tires,



rechromed all around; very, very clean. Heater, turn signals. $2950 firm. L. Tigerman, 7777 N. Pheasant Lane, Milwaukee 17, Wis. Phone FLagstone 2-0343.

'30 FORD 2-dr. phaeton. No dents, no rust. '32 shell. $400. Franklin steering $25. '53 Chrysler engine—all chrome, just rebuilt; perf.; ¾ cam — $450. Rev. P. J. Basford, 504 N. 2nd, Banning, Calif. Phone VI 9-2434.

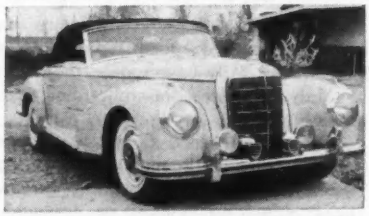
'60 PONTIAC 2-dr. with 4-speed trans. Chrome wheels & engine; Hi-Y cam, lifters, headers, 3-2s. Hand-rubbed; AM-FM; new tires. Perf.; 17,000 mi; never dragged. $3500 firm. Rev. P. J. Basford, 504 N. 2nd, Banning, Calif. Phone VI 9-2434.

'34 PACKARD Standard 8 rumbleseat conv. cpe. Exc. thruout — new engine, top & tires; perf. body, black lacquer; all wood refinished. $700 firm. Leon N. Hanief, 436 S. Normandie Ave., Los Angeles 5, Calif.

'60 MERCEDES-BENZ 190 Diesel. Light gray finish. Exc. cond.; 12,000 mi. $2720 p.o.e. New York. Franz Fass, Dammstrasse 12, Waiblingen/ Württemberg, Germany.

CLASSIC & ANTIQUE CAR Sales Catalogs: Packard, Chrysler, Lincoln, Cadillac, Pierce-Arrow, Buick, Ford (Model A & later), Orphan & Foreign cars; minimum $5 ea. Also MoToR (N.Y.) Annual Numbers. Details for large, stamped, addressed envelope. No parts for cars. A. E. Twohy, 400 N. Kenmore, Los Angeles 4, Calif.

'54 MERCEDES-BENZ 300-S conv. in very nice cond. Full leather int., 6-band short-wave radio, reclining seats. Tan with black top; new ww's.



$2850. James E. Edmunds, 714 Brassie Dr., Grand Junction, Colo.

FACTORY SHOP MANUALS for imported sports cars & sed., incl.: MG, Austin-Healey, Jaguar, Alfa Romeo, Triumph, Sunbeam, Hillman, Morris, Renault, Skoda, Lancia, Austin, Singer, Rover, Riley, Mercedes-Benz, Porsche, Citroen. List free. Vivian Gray, Hurstpierpoint, Sussex, England.

COLLECTORS: Do you collect auto catalogs, photos, manuals, badges? This is your hobby club. Monthly bulletin, literature exchange, free info. Auto Enthusiasts, Box 451-D, Mount Clemens, Mich.

TUCKER AUTOMOBILE factory folders, test by Tom McCahill, history of the car, sales sheets, newspaper ads, etc. Package mailed anywhere for only $1. Jerry Moore, Box 10574, Riviera Beach, Fla.

AMAZING VU-GAGE. Gives permanent precise tire pressure reading, visible at all times. Automatically locks on tire valve, flashes red when tires are dangerously under-inflated. Helps prevent theft of hubcaps. Box of 4 with 2 spec. locking keys — $4.95 per set. Sheldon J. Lewis, 61-33 213th St., Bayside, L. I., N. Y.

CLASSIC AUTOMOBILE catalogs, manuals, dealer's books, MoToR Annual Show Issues '25-'43. 12 x 14 magazine ads on every auto '20-'30. Over 1000 items in stock. Complete listing 35¢. Sheldon J. Lewis, 61-33 213th St., Bayside, L. I., N. Y.

COLLECTORS — Automobile ink drawings. Cars of the '30s, Set 3: '31 Studebaker, '32 Buick, '33 Pierce-Arrow, '36 Auburn, '37 Chrysler & '38 Ford. 8½ x 11-in. quality paper stock for mounting or framing for den or recreation room. All 6 for $2. Watch for Set 4. Cole-Cars, 243 S. Whiteoak St., Apt. C, Kutztown, Pa.

'22 MODEL T touring. Exc. cond. — orig. leather int.; new top, tires, paint. Exc. mech. cond. Needs no restoring. $1200. Bart Gilman, Jr., Upton Lane, Goffstown, N. H.

'29 LA SALLE rdstr. — only one in the country. Good paint, 5 wire wheels, fair running cond. Completely orig., but needs some restoring. $1500. Alton Walker, Pebble Beach, Calif. Phone MA 4-6658.

WANT A BEAUTIFUL 11 x 14-in. pen & ink drawing of your favorite automobile, suitable for framing? Send picture or snapshot of car & $3. John Knarr, R.D. #2, Schuylkill Haven, Penn.

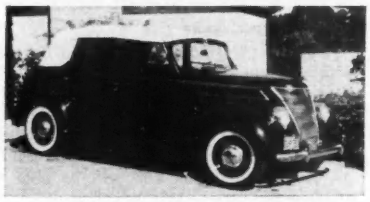
'30 MODEL A conv. cpe., with wind-up windows & rumbleseat. New top & int.; exc. new paint job. Driven daily. $900. F. C. McClanahan, Jr., M.D., Box 345, Nellgh, Neb.

FIBERGLASS sports car body — La-Dawri "Conquest"— on modified Henry J frame with rebuilt engine & bolt-on hard top. Robert T. Elder, 325 E. Friend St., Columbiana, Ohio. Phone IV 2-2668.

'56 CONTINENTAL Mark II in immac. orig. cond. Black, with 2-tone gray leather int.; air-cond. 12,000 mi.; never driven in winter. $5500. Clen Standish, 1930 Melody Dr., Fremont, Ohio. Phone FE 2-3972.

'38 BUICK Limited 4-dr. 5-pass. limousine, with bar in back seat, sidemounts. Restored — new paint, chrome & glass; new ww's. 45,000 mi. $1100. William J. Gutterman, 2295 W. Highway 36, Saint Paul 13, Minn.

'37 FORD 4-dr. conv. Stock; 3000 mi. since quality rebuilt engine installed. Body perf., Brewster green, with buff top; ww's. Best offer



over $700. John C. Snidecor, 2705 Verde Vista Dr., Santa Barbara, Calif.

AUTOMOBILE CATALOGS — all orig. Send 25¢ for list — (a) 1908-'30 or (b) '31 & later. Autolit, 9 Lindworth Lane, St. Louis 24, Mo.

'36 LINCOLN V-12 8-pass. limousine; alum. body. New paint — otherwise orig. Mech. good; drive anywhere. $550. Tom Hoiseth, 204 W. 23rd, Sioux Falls, S.D.

'38 PACKARD Straight 8 limousine. New uph. & carpeting, new fabric on top, new chrome on bumpers & trim. Drive anywhere. $950. Tom Hoiseth, 204 W. 23rd, Sioux Falls, S.D.

METAL TRUNK with fitted suitcases for '30 Buick. Good cond. $100 or best offer. Sterling M. Lamb, R.F.D. #3, Circleville, Ohio.

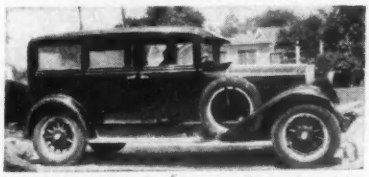
MOTOR TRENDS — April '50 to March '58 — $150 or highest offer. *Hot Rod* — March '49-Dec. '55 — $100 or highest offer. All exc. cond. Dave Jones, 258 Niagara Ave., Dayton 5, Ohio.

'03 MODEL A with tonneau — in exc. cond. for restoration. Main items needed to restore: tires, front end radiator cover, steering wheel rim & reupholstering. Best offer. Richard Collingwood, 314 Broadway, Findlay, Ohio.

'28 DE SOTO — rare 1st-yr. model. Exc. orig. cond.; owned by 1 man for 32 yrs. Runs good. Collector's dream — make firm offer. Fred Schureman, Chappell, Neb.

'37 CORD 4-pass. conv. cpe., with rear-drive setup. Good body, near-new top. Has no engine or trans. Car must be restored. $450. Vic LaFontaine, 6191 Laird Ave., Oakland, Calif.

'28 PIERCE-ARROW 6-cyl., 4-dr., 7-pass. sed.



in running cond. Orig. paint. Best offer. John Nickrasz, 2925 S. 7th St., Milwaukee 15, Wis.

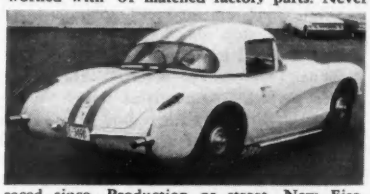
'49 CHRYSLER Town & Country conv., powered by '54 Imperial V-8. Pushbutton Powerflite trans. & power steering. Imperial wire wheels, recently-new tires. Trophy-winner. Duane Placek, 3104 S. 56th St., Omaha 6, Neb.

'41 LINCOLN CONTINENTAL V-12 conv. All orig.; all perf. $2500. Jack Bellamy, Elwood, Neb.

'19 MODEL T center-door sed., with circle rear window. New top, uph., tires, tubes, rings, bands, glass, carpet, battery, paint. $1200. '23 T touring — $1000. J. B. Herring, 2970 Dixie Highway, Crestview, South Ft. Mitchell, Ky. Phone DI 1-6739.

'28 MODEL A 2-dr. Very good cond., except uph. on seats. Can be driven anywhere—driven every day in '60. $200. Leland Murphy, R.D. #2, Fort Edward, N.Y.

'57 CORVETTE Sebring "C," completely reworked with '61 matched factory parts. Never



raced since. Production or street. New Firestones. $3495. Britt Brown, Eagle, Wichita, Kan.

'23 CADILLAC 7-pass. limousine. Orig. paint & int. in good cond. — leather chauffeur's seat, pass. compartment all mohair. Drivable. $1000. Earnest Hanks, 1030 Fallen Leaf Rd., Arcadia, Calif.

'29 MODEL A in running cond. Body in very good shape — rest restorable. First $150, or best offer, takes. Richard Ramp, R.R. #2, Columbia City, Ind. Phone LAud 2831.

SELL OR SWAP

1894 IMPERIAL (?) in running cond. ⅞ restored. Best offer around $1800; will accept trade. C. Raymond Tucker, 17 Raymond St., Hamburg, N.Y. Phone NH 9-3251.

'57 DE SOTO Golden Adventurer hdtp. 345-cubic-inch, 345-hp engine; heavy-duty Torqueflite; power brakes & steering; new air-cond. $1495 or best offer, or trade. Preston Hogue, Emory, Tex.

'53 MERCEDES-BENZ 300 4-dr. conv. No engine or radio — otherwise fine. Ideal for engine conversion. $950; take foreign trade or Corvette, any cond. John Darrow, 52 Main St., Livonia, N.Y.

AUTOMOBILE SALES catalogs, literature & owner manuals — '46-'61. 100 items '56-'61 sent postpaid for $6. List 10¢. To trade, send list of your duplicates. Howard L. Applegate, 1119 Euclid Ave., Syracuse 10, N.Y.

'57 MG-A conv., with 265 Chevrolet V-8, Mallory ignition, racing cam, solid lifters, 3-speed Corvette trans. Low mileage on street use. Make offer, cash or trade. R. J. M. Bell, 38 Hallbrook Dr., Calgary, Alberta, Canada.

'32 PLYMOUTH PB Deluxe sed., with 2 sidemounts & trunk rack. $1170 invested; will sell for $600 or what-have you? Joe Olivares, 3965 E. California St., Pasadena, Calif.

'56 CONTINENTAL Mark II in new, immac. cond. Light blue, with white leather, blue trim. Air-cond.; all extras. 23,000 mi. $5000; consider compact trade. Deliver anywhere. W. Silver, 1944 Curtis, Berkeley, Calif.

WANTED

'53 WILLYS Aero Eagle hdtp. Body & all sheet metal, incl. understructure, must be rust-free & in good cond. — not exposed to salt corrosion. No wrecks. Engine, chassis, tires, paint & inside trim cond. unimportant. Drivable or shippable. Advise price, mileage & detailed cond. C. R. Paton, Box 31, Birmingham, Mich.

'49 CHRYSLER Windsor or Royal. Finish & uph. must be orig. & perf. Will pay $500. Anywhere in U.S. $100 for outside info resulting in purchase. J. E. Legory, 70 Darby Rd., Paoli, Pa.

NEW DE SOTO & Ford obsolete parts '29 thru '41. Need running boards, fenders, grilles, hood ornaments, radiators, bearings, accessories, etc. Will buy 1 item or your lot. Sarnoff Sales Co., 1167 E. Park Ave., Vineland, N.J.

CASH for good '20s, '30s Packard touring car. Willing to trade references & travel. Johnny Heffinger, Jr., P.O. Box 97, Hartland, Wis.

'30-'36 PLYMOUTH, Dodge or Chrysler rdstr. or cpe. with rumbleseat. Need not be in running cond., but body must be intact & solid. James Shillito, 9081 Woodridge Rd., Painesville, Ohio.

'29 HUPMOBILE, Nash or Gardner rdstr. A. B. Compton, Jr., Lincoln Storage Co., 315 E. 1st St., Dayton 2, Ohio.

'53 BUICK Skylark. Body, sheet metal must be rust-free, undamaged, unmodified. From South or Southwest U.S. Top price; pay also for info leading to purchase. Kenneth Amrhein, 706 Fitzhugh St., Bay City, Mich.

SUPERCHARGER — used Judson or similar type for VW Karmann-Ghia. Must be in good cond. & reasonably priced. Full details 1st letter. Lt. Col. Karl W. Seemann, Hq., MOADS, Gunter AFB, Ala.

ORIGINAL automobile owners instruction books, sales catalogs, shop manuals — any make 1900-'25, classics '25-'35. Also ALAM, ABT, NACC Handbooks. Prices & details in 1st letter, please. R. Pierce, 3517 Dollar Dr., Akron 19, Ohio.

BOYCE SCRIPT MOTOMETERS, new or used, fancy radiator caps & mascots, classic automobile catalogs, manuals, MoToR Annual Show Issues, ATJ magazines. Top prices paid. Sheldon J. Lewis, 61-33 213th St., Bayside, L.I., N.Y.

WANTED!

Mechanically Inclined Men to Qualify for

BIG PAY JOBS

AND SPECIAL FACTORY TRAINING IN DIESEL

"We need qualified repairmen, operators, mechanics NOW!", say Diesel Manufacturers. Highway Builders, Truck Line Operators in every corner of America. Can *you* qualify for these High Pay Jobs? We can help you! Interstate's General Course and Cummins-approved Diesel home-training courses are internationally recognized. Advisory placement service for trainees. Don't wait. Men are needed NOW!

Get the Facts Today!

WRITE INTERSTATE TRAINING SERVICE
Dept. A-29, Portland 12, Oregon
Rush information on I.T.S. Diesel Courses, Special Factory Training and Diesel Job Opportunities.
Name_____
Address_____
City_____ Zone____ State_____

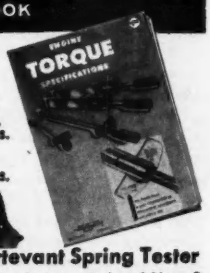
Works in seconds!

Loosens Rusted Bolts
nuts, screws, "frozen" parts!
LIQUID WRENCH
SUPER-PENETRANT
The super-penetrating rust solvent that quickly loosens rust and corrosion.
AT ALL HARDWARE AND AUTO STORES
RADIATOR SPECIALTY COMPANY
CHARLOTTE, N. C.

FREE! Engine Torque Specification BOOK

TORQUE WRENCHES *of Life Time Accuracy*

Sold around the world by leading hand tool manufacturers, mail order houses, chain stores, specialty houses. Inch-pound, foot-pound and metric models in wide range of different capacities.



Sturtevant Spring Tester
With any torque wrench, quickly and accurately tests and matches sets of valve, clutch and other coil springs.

Write Department "W" for Free Book and Catalog
P.A. STURTEVANT CO. ADDISON (QUAD-CITY) ILLINOIS

New KING MIDGET

WORLD'S MOST EXCITING LOWEST PRICED CAR
Rider Agents Wanted. Send 25c for 32 page picture book, full details, dealer price. Or send $1 (refunded first order) for this plus Service and Repair Manual and 16 5x7 photos of car and factory.
MIDGET MOTORS CORPORATION, ATHENS 6, OHIO

CAR CLINIC

By Barney Navarro

Barney Navarro, one of the most experienced writers in the field, will answer readers' technical questions each month. Your letters are invited.

SWAPPING LIFTERS

I have just changed the lifters on a 1960 352-cubic-inch, 300-hp Ford engine. I replaced the hydraulic lifters with mechanical lifters from a 1960 352-cubic-inch, 360-hp Ford. The stock hydraulic camshaft was used.

I would like to know the lowest, safest clearance at which to set the valves.

Donald R. Willems Rolla, Mo.

You made a big mistake. Either change the cam to a mechanical lifter cam such as the 360-hp Ford part or put the hydraulics back in the engine. Hydraulic lifter cams do not have clearance ramps so the valves must be set dangerously close for quietness when solid lifters are used with them.

ELECTRIC DREAM CAR

Would an automobile with one rear wheel set six inches ahead of the other be practical to steer and drive?

I was trying to dream up an electric automobile with swing axles, no differential, no driveshaft, no universals, with inboard brakes to reduce unsprung weight and to mount the rear wheels so that they would remain as nearly perpendicular to the road as possible during their movement up and down.

So I figured on an electric motor and perhaps enough gears for an "emergency low" and an inboard brake on one end of as long an axle as possible and the wheel and tire on the other end, the axle to pivot on the motor end.

Russell Kneale Willoughby, Ohio

A six-inch difference in wheelbase such as you propose would cause some horrible steering geometry and handling problems.

The Charles Townabout, an experimental electric car, was fitted with swing axles in the rear that were converted Volkswagen components. The pivots of these axles were at the center of the car, so the wheels would remain closer to perpendicular while springing than the Volkswagen's. The motors were attached parallel to and on the sides of the axle housings as close to the center of the car as was mechanically possible. Spur gears on the inboard ends of the motors drove the axles.

CHATTERING CLUTCH

I have a 1959 Ford Six with a manual transmission. This car at approximately 15,000 miles developed a chattering, grabby clutch. I had the clutch plate, pressure plate and throw-out bearing renewed. This did not solve the problem. The clutch still chattered and grabbed when being engaged in forward motion.

After a week's use the new clutch showed no tendency to smooth out — instead, it got worse. So my mechanic again installed another clutch plate and pressure plate. We noticed the back wheels also seemed to chatter, or jump up and down a bit, when the clutch was being engaged, so he installed an extra half leaf on top of the forward half of the rear spring in an attempt to stop the back wheel chatter. All of this was to no avail.

When the car is reversed, the clutch works perfectly — smooth as satin.

Do you have any suggestion as to where my trouble might be originating?

W. H. Baker Crudersville, Ohio

Clutch chatter is usually caused by an inter-action between throttle linkage and clutch linkage that results from the engine's movement on its mounts. Some cars develop chatter in reverse; others do it in the forward gears. What actually happens is that the degree of throttle application and clutch engagement is changed by the tilting of the engine in its mounts.

After much tinkering with the linkage, it is sometimes possible to eliminate the chatter, but the cost of time spent in correcting the condition often exceeds the cost of a hydraulic linkage.

Some Ford trucks employ a master and slave cylinder system that can be adapted to an automobile. The master cylinder is mounted near the clutch pedal pivot and the slave cylinder at the clutch throw-out lever. Since the two cylinders are connected by a hydraulic hose, engine movement has no effect on clutch engagement.

FOUR-SPEED VS. THREE-SPEED

I have purchased a 1961 Chevrolet and was wondering if you had any information as to a three-speed and four-speed, in the quarter-mile.

I had a 1959 Chevrolet sport coupe, with the same drive train, except in place of the three-speed I had the four-speed. My experience with the four-speed was very sad. My old 1958 Chevy with three two-barrels and three-speed could take me three out of four times.

What made it even worse was that the '58 Chevy had only 280 hp and my '59 Chevy had 335 hp, with an edge on torque and compression — but nevertheless, the '58 was better in the quarter.

That is why I ended up with a three-speed, even though everyone told me I was making a mistake.

I would appreciate your viewpoints.

Jim Williams Salt Lake City, Utah

Four-speed transmissions have no magical features that will convert a passenger car into a racing machine. Whenever an automobile is purchased, the buyer should know why he is ordering a four-speed gearbox. The effect that this unit will have on the automobile can only be understood if something is known about the gear ratios — not just the transmission, but the rear end also.

Your 1958 Chevrolet with the three-speed gearbox outperformed the 1959 model with the four-speed because of the very small low gear ratio in the four-speed unit. The 2.2-to-1 ratio of the four-speed transmission obviously will provide less rear wheel torque than the 2.94-to-1 ratio of the 1958 three-speed, but the true effect cannot be realized unless both figures are multiplied by some standard rear end ratio. Assuming that the rear end gears provide a 3.7-to-1 reduction, the overall ratio with the four-speed box in first gear will be 8.14-to-1; the three-speed unit provides a 10.88-to-1 ratio. Obviously, the larger figure will provide more torque at the rear wheels.

In order to make your 1959 model with the four-speed outperform the '58 using the three-speed, the later model should have had a 4.56-to-1 rear end.

Due to a change in ratios adopted for the 1961 transmissions, the four-speed will provide better performance regardless of rear end gear ratio. That is to say, if both transmissions are used with identical rear end gears, the four-speed unit will provide better acceleration because of more favorable gearing.

	Three-Speed	Four-Speed
1st	2.47	2.54
2nd	1.53	1.92
3rd	1.0	1.51
4th		1.0

The four-speed gearbox makes it possible to keep the engine rpm closer to the point where maximum horsepower is developed for a longer period of time.

DE-CAMBERING REAR END

I own a 1960 96-hp, three-speed Corvair Monza. I am considering de-cambering the rear end, and lowering the front end.

What are the pros and cons of these procedures (weight distribution, etc.), how are they best accomplished and how far can I go on the front end and still be able to re-align it?

I would also like to know the best method of speeding up the steering.

Vincent Neil Alexandria, Va.

De-cambering the rear end will make the car corner better, but it will increase tire wear and cause uneven tread wear. Since the bottom of each rear wheel will tilt outward the majority of the time, the inside portion of each tire's tread will receive more wear. In addition to this factor, the wheels will have a tendency to be toed-in for a greater period of time than they are neutral, so this too will add to tire wear.

The amount that the front end can be lowered depends on the individual automobile. The variable that governs the extent of lowering is the number of shims installed between the inner shafts of the suspension upper control arms and the front cross member. Due to variations in production of the various front-end components, the number of shims installed at the factory will vary somewhat. If your car required a large number of shims when it was built, you may be able to adjust the camber even after the car is lowered three inches. On the other hand, if there are no shims, you cannot correct the camber, no matter how little you lower the machine.

Toe-in adjustments pose no problem whatsoever, because the steering linkage is provided with sufficient threads to make the required corrections. However, you'll just have to be satisfied with the current steering ratio because there is no inexpensive method of changing it.

REWORKING CARBS

Being the owner of a dual-four-barrel-carbureted Corvette, I was tantalized by a remark in your recent article, "What's the Best Carburetor?" (May MT): "It can actually be reworked to allow a higher horsepower output than that obtained with the injection system . . ." I would be very inter-

ested to learn how – short of designing a "variable-venturi."

I chose the dual four because I thought it would be more easily maintained. Someone had remarked that the FI apparatus was too finicky for a production automobile. What is your opinion on the matter?

My final question has to do with the allegation that carbureted V-8's when cornering sharply suffer starvation of the inner and glutting of the outer bank of cylinders. If this is so, is there any means of compensation?

Lt. Lawrence B. Mutty Charleston, S. C.

The reworking that was alluded to in the article deals with the manifold, not the carburetors. It was stated that two cylinders of a dual-four-barrel-equipped Corvette are starved at high rpm. If you examine the eight openings exposed by carburetor removal, the reason becomes very apparent when you fully understand the purpose of the manifold. It will be noted that a narrow diagonal slot joins two throats under each carburetor. These slots are too small in cross section to satisfactorily connect the other carburetor throats to the ports of cylinders number 2 and 8.

In order to fully realize the importance of this deficiency, one must bear in mind that the purpose of a dual-four-barrel manifold is NOT to provide one throat per cylinder. It is merely employed to make available varying numbers of throats, from one to four, in each half of the manifold. When we discuss manifold halves we do not wish to infer that there is a division through the middle which produces a left and right. Actually the manifold is divided so that cylinders 2 and 8 of the right bank and 3 and 5 of the left bank are all fed by the same carburetor throats. The remaining four cylinders are joined by another independent passage system, but we will not discuss this group since it doesn't suffer from the same deficiency.

The order of the induction events in the poorer half of the manifold, of which we are concerned, is naturally the same as the firing order with every other number left out. It is really that of a V-4, but using the standard numbering system of a Chevrolet V-8 it appears as follows: 8-3-5-2. (Firing orders should really be written in a circle, since there is really no beginning and no end.) Conventional V-8's fire every 90 degrees and being that the foregoing firing order lacks every other number, the numbers that appear to follow each other are 180 degrees apart.

A mild cam that keeps intake valves open for 250 degrees of crank rotation will provide 70 degrees of simultaneous opening for each consecutive pair of valves. This is so because a valve must open every 180 degrees and stay open for 250 degrees, the resulting 70-degree difference produces the overlapping of events. (Subtracting 180 from 250 leaves 70.) A 280-degree cam, in this same manner, will cause this dual opening to be extended to 100 degrees.

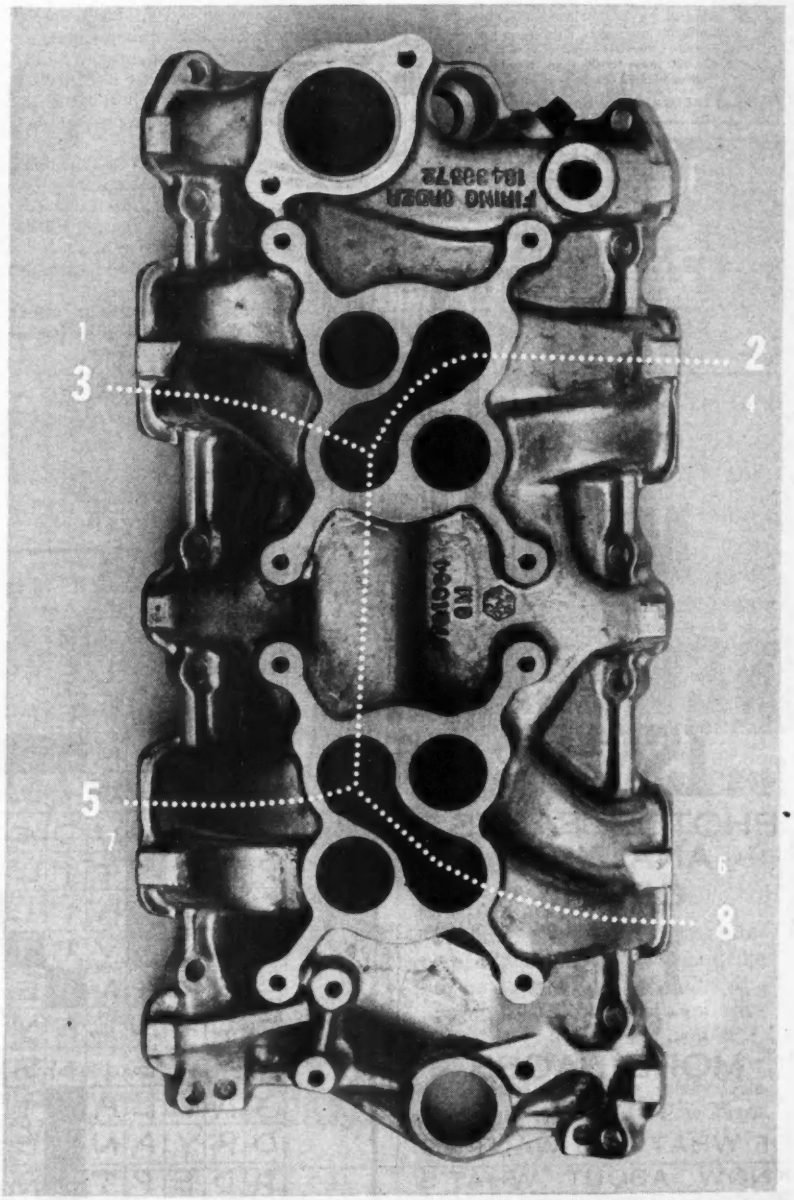
This widening of the span of dual opening demonstrates one of the reasons an engine will require more carburetion after the installation of a more radical cam.

Now that we have established some basic relationships between consecutive valve activities in our "dual-V-4" engine, we can apply them to the manifold layout. Again it must be emphasized that the eight throats should not be considered as a complicating factor, because the manifold is really a simple dual-throat with three extra holes "punched" in each half.

In order to best understand the flow problem in the manifold, we will only trace a portion of the activity in the more poorly designed half. A further concession to clarity will be made by starting with the later portion of the intake event at number 2 cylinder. This is the last one to take in a charge in the "V-4" firing order before number 8 does again.

Assuming that a 280-degree cam is used, number 8's intake valve will start to open 100 degrees before number 2's closes. At this time number 8's fuel mixture demand is on the increase and number 2's is declining. Nevertheless, at this point, the main flow from all four interconnected throats is to number 2 at the front of the engine. For a period of 80 degrees prior to the initial opening of the number 8 intake valve, all four throats are made exclusively available to number 2 cylinder because its valve is the only one open.

Number 2 port has one carburetor throat adjacent to it and three interconnecting additional throats that are connected to it through a restricting hour-glass-shaped diagonal slot. The slot is so small that it isn't even able to accommodate one extra throat. Number 8 at the rear of the engine suffers



DOTTED LINE TRACES PASSAGES OF HALF OF CORVETTE DUAL-FOUR-BARREL MANIFOLD.

HOME IMPORT BUSINESS

MEN...WOMEN...MAKE BIG PROFITS... Buy dazzling bargains abroad. Sell to friends, stores or mail order. New Drop Ship Plan puts you in *direct contact with overseas sources*—starts you full or spare time, without product investment or previous experience. Complete details FREE. Write *today!*

MELLINGER CO., Dept. T138A
1717 Westwood, Los Angeles 24, Calif.

Plan shows where you get bargains like these for big profit sales. **DO NOT ORDER FROM US**

KROIL LOOSENS RUSTY FROZEN PARTS

creeps in

Frozen bolts, pipe threads, bearings, etc., yield to Kroil, the chemical lubricant that creeps into millionth inch spaces, dissolves rust and dried grease. Harmless to metal or skin — used by 25,000 shops for 20 years. Now available in half-pint spout cans, 65c at your dealer.

KANO LABORATORIES, Nashville 11, Tennessee

4-WAY WELDER $14.95
WELD · BRAZE · SOLDER · CUT Complete

FOUR-WAY WELDER

NO OTHER WELDER AT THIS PRICE Complete with SAFETY FOOT SWITCH, FULL FACE SHIELD, twin carbon arc torch, welding rod holder, clamp, carbons, welding & brazing rods, flux, fuses, instruction book. FULL YEAR GUARANTEE. More than a quarter million in use in homes, garages, farms, shops, factories. NOW anyone can weld, braze, solder, cut, heat, without experience. Does 1001 jobs on all metals. Save & earn money. Make & repair auto bodies, parts, fenders, trailers, boats, metal furniture, fixtures, ornamental iron, farm equipment, garden tools, bicycles, toys, etc. Operate on any properly wired 110 V AC line. SEND ONLY $2. Pay postman $12.95 plus C.O.D. charges. Ideal lifetime gift for hobbyist, mechanic, hot rodder, homeowner. Order on 10-day money-back guarantee.

FOUR WAY WELDER CO. 1810 South Federal Street Dept. F27M, Chicago 16, Ill.

COMING NEXT MONTH
COMING NEXT MONTH
COMING NEXT MONTH

MT's SPECIAL NEW CAR ISSUE

PHOTOS, FACTS, ANALYSIS OF THE **1962** CARS

MORE PAGES MORE

OF WHAT YOU WANT TO KNOW ABOUT WHAT'S COMING FROM DETROIT

from the same deficiency after number 2's intake closes, and it too reaches the same operating state.

Since the "bottleneck" produced by the slot cannot be eliminated by widening it (there is insufficient space between the throats), deepening is the only solution. The bottom of the slot actually cannot be made any deeper because a cross-over passage is directly underneath the passage wall, but its top can be raised by inserting a 1¼-inch spacer between the carburetor and the manifold. The spacer duplicates the four throats and the diagonal slot joining two of them. In this way the cross-sectional area in the bottleneck can be doubled.

In addition to this modification, the accessible passages should be enlarged to match the size of the intake ports.

ROUGH IDLE

I am the owner of a 1961 Buick Special. I have been troubled by a rough-idling engine. My Special has the low (8.8-to-1) compression ratio. My dealer has tried unsuccessfully to smooth the idle. He claims that a rough idle is characteristic of these engines.

The engine is equipped with a crankcase breather which feeds vapors into the intake manifold directly below the carburetor. Could this be the cause of the rough idle? I have heard that the one-way valve in the breather system eventually becomes fouled with oil. Is this possible?

Could you suggest a means of smoothing the engine idle other than by adjusting the carburetor fuel-air mixture screws?

Roger C. Burrows Los Angeles, Calif.

Perhaps you are trying to make the engine idle too slowly. Most modern engines, including the Buick Special, will not "tick over" slowly like a lot of the old-fashioned machinery did. Whenever an engine uses a cam with a moderate amount of overlap it becomes less tolerant of a slow idle. In other words, you may be able to adjust the carburetor's idle jets to a smooth idle if you are persistent and careful, but the slightest deposit of dust or gum will upset the delicate "balance" and the engine will start to gallop.

RECAP PROBLEMS

I have recently had four tubeless tires recapped on a 1960 Cadillac. The recapping firm suggested that tubes be used to avoid separation of the recap from the fabric, but I decided against this and asked them to mount the recaps without the tubes.

The following day one of these recaps did separate, and I was told by the recapper that there was nothing he could do since his job was not at fault. Two thousand miles later, another of the recaps separated. He again says he is not at fault and suggested that I use a knife to release the air caught between the recap and fabric.

The recapper further states that in all probability the carcass will outlast the tread. Also, that it is not dangerous to drive with this tire — the fabric is not damaged.

Is this an accepted gamble that anyone who has tubeless tires recapped has to take? Or is the recapper taking advantage of his customers?

E. G. C.

Your experience with tubeless recaps is by no means rare. The difficulty probably stems from the fact that a car is rarely driven for the life span of its tires without having a flat. The holes resulting from such incidents can be repaired with rubber plugs which project through casing and tread. Basically they are like rubber bottle corks — some have mushroom heads inside the casing that assist in sealing and retaining them. When tires are recapped, the mushroom heads are "out" so occasionally a plugged or maybe even an unplugged hole will leak air between the casing and the tread layer and cause it to blister if it isn't well bonded. /MT

ANSWERS TO THE SEPTEMBER CAR CROSSWORD

1 F	2 O	3 R	■	4 P	5 R	6 O	7 N	8 Y	■	9 O	10 S	11 C	12 A	13 R
14 A	B	E	■	15 L	E	V	E	E	■	16 F	L	A	R	E
17 R	E	L	■	18 Y	E	A	R	A	■	19 F	A	M	E	D
20 A	S	E	21 A	M	■	■	■	22 R	23 A	I	N	■	■	■
24 D	E	T	R	O	25 I	T	26 E	27 L	E	C	T	R	28 I	29 C
■	■	■	31 N	U	D	E	L	Y	■	32 I	S	A	B	E
33 P	34 R	35 S	■	36 T	I	L	L	■	37 E	A	■	38 D	E	L
39 L	E	E	■	40 H	I	L	■	41 P	E	L	■	42 I	A	L
43 U	S	N	■	44 V	T	■	45 O	A	R	S	■	46 O	M	S
47 G	E	N	48 O	A	■	49 S	P	R	I	T	E	■	■	■
51 S	T	A	N	L	E	Y	S	T	E	A	M	E	R	S
■	■	■	56 E	I	N	S	■	■	■	52 R	E	B	E	L
58 G	59 A	60 L	L	A	■	61 T	62 I	63 B	64 E	T	■	65 O	T	E
66 O	R	Y	A	N	■	67 E	R	O	D	E	■	68 N	I	D
69 A	D	E	P	T	■	70 M	E	T	E	R	■	71 Y	E	S

ARMSTRONG TIRES

"Ounce of Prevention" Safety Discs can save your life!

ARMSTRONG
Armstrong Rhino Flex Tires
ROAD HAZARD GUARANTEE
VALID FOR AS LONG AS YOU OWN THIS TIRE
THE ARMSTRONG RUBBER COMPANY

GUARANTEED AS LONG AS YOU OWN THEM!

Armstrong Tires are guaranteed, not for 18 or 24 or 36 months, but *as long as you own them!* (Adjustment is based on used tread depth and Armstrong's printed adjustment prices in effect at time of replacement.)

Grip the road to stop deadly skids as no other tires can!

ARMSTRONG TIRES:

Exclusive Safety Discs keep tread's gripping edges open.

Over 1,000 Safety Discs keep the tread ribs apart, just as discs in fist at left keep fingers apart. Tread can't squeeze shut, no matter how hard you brake! It's always open, always ready to grip the road to protect you against deadly skids. Only Armstrong has this extra safety – and it costs you no more!

ORDINARY TIRES:

No Safety Discs: Tread's gripping edges can squeeze shut.

Without Safety Discs, braking pressure *can* squeeze tread ribs shut, like fingers at left. Gripping edges disappear, tread goes smooth and slippery . . . and suddenly you skid. Don't risk deadly skids. Get the added protection of patented Armstrong Safety Disc Tires. See your Armstrong dealer in the Yellow Pages.

AS LOW AS $10.95 (6.70 x 15) Plus tax and your recappable tire

If you don't know tires, know your tire dealer. Armstrong dealers back their tires with a guarantee that never expires!

THE ARMSTRONG RUBBER COMPANY, Home Office, West Haven, Conn.

Stolen from Research Library
• PETERSEN PUBLISHING CO. •

It's what's up front that counts

FILTER-BLEND up front, *ahead* of Winston's pure white filter proves Winston *has* it. Mild, flavorful tobaccos specially selected, then specially processed for filter smoking. That's FILTER-BLEND. Quite a smoke. Next pack you buy, make it Winston.

Also available in crush-proof box.

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N. C.

WINSTON TASTES GOOD *like a cigarette should!*